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## PREFACE

Special attention is directed to the loose-leaf design of this plan. Binding the document in this manner allows for changes as new approaches and types of subsystems are developed which can improve emergency medical services.

Proper acknowledgment must be given to the Governor's Advisory Council on Emergency Medical Services for its participation in the development of this plan. The persons and organizations serving on this council represent the involvement of those who provide emergency medical care on a day-to-day basis and consequently realistic solutions to on-going problems in emergency medical services are being developed. To further gather advice from the various disciplines involved in the delivery of emergency medical services, committees of the Council were developed to represent the various components of an EMS system such as training, transportation, communications, and hospital emergency departments.

A major objective of the plan is to provide guidance in the development of on-going, self-sustaining systems for the delivery of emergency medical services. Although financial assistance may be necessary for the initial development of local systems, the creation of federally funded programs that cannot be financially maintained locally must be avoided. Ultimately, the responsibility for the delivery of emergency medical services lies within each locality and, therefore, the monies necessary for the provisions of this service should be generated at the local level. To provide the best possible care for the emergency patient, a single agency, such as the E.M.S. Bureau, must have the responsibility for coordinating local systems to assure their compatibility and allow them to develop into regional systems to provide a statewide network for emergency medical services.



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## INTRODUCTION

Each year Montanans are dying and suffering permanent disabilities needlessly because of inadequate emergency medical services. The repeated loss of persons who die unnecessarily because lifesaving personnel and equipment are not available is a tragedy that can and must be eliminated.

The Governor's Advisory Council on Emergency Medical Services<sup>1</sup> has guided the State Department of Health and Environmental Sciences in the development of this State Plan which is designed to reduce death and disability in Montana resulting from medical emergencies.

The accidental death rate in Montana is 52% higher than for the United States and is the State's fourth leading cause of death. The motor vehicle death rate is 41.8 (per 100,000 population) while for the United States it is 26.2. For accidents other than motor vehicle, the rate for Montana is 40.5 as compared to the national rate of 28.0. Motor vehicle accidents account for approximately 50% of the total accidental deaths in Montana. Nationally, trauma is the leading cause of death between the ages of one and thirty-seven. In Montana, 75% of all deaths between the ages of one and thirty-four are the result of accidents including motor vehicle.<sup>2</sup> Statistics of the National Safety Council show that in 1971, accidents resulted in temporary disabling injuries to more than 11,200,000 persons, killed more than 115,000 and permanently disabled more than 420,000 (ref. 3).

There is now a dire need for statistics on all phases of emergency medical services, and medical emergencies other than accident must also be considered a responsibility of emergency medical services. In the United States it is estimated that 60,000 lives per year could be saved by improving emergency medical services (ref. 4). In Montana, 6,172 persons have died as a result of accidents during the years 1962-1971. It is estimated that 180 lives could possibly be saved each year if emergency medical services were improved. Although no statistics are available, we must assume that the tragedy of permanent disability can also be reduced.

A dominant cause of current deficiencies in emergency care is the apathy of the general public towards the magnitude of the problem of accidental death and disability, and towards death from acute illnesses which are preventable. All segments of the population

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<sup>1</sup>See Governor's Advisory Council on Emergency Medical Services, page iv.

<sup>2</sup>Montana Vital Statistics, Bureau of Records and Statistics. See Charts and Graphs Appendix.



must be aroused and informed of present practices and deficiencies in emergency medical services and of ways in which optimal emergency care for the suddenly injured or ill can be provided. In addition to public indifference, a shortage of well-trained personnel, ambulances, communications equipment, coordination among hospitals, as well as fragmented efforts of local services are major causes of deficiencies (ref. 2). The trend of physicians to concentrate in urban areas in Montana emphasizes the need for others to provide lifesaving procedures in times of medical emergencies. This trend also suggests the need for regionalization of emergency medical services around major hospital facilities.

To find answers to these and other problems, we must look at the nature of emergency medical services. The elements of such a service include: first-aid at the scene of the emergency; an easily accessible communication system; notification of the proper authorities that an emergency has occurred; prompt dispatch of an ambulance or other emergency vehicle; stabilization of the patient at the scene by well-trained personnel; properly designed and equipped vehicles for transportation; and definitive care at a medical facility sufficiently equipped and staffed to provide the best possible care. With all of these steps viewed as interconnected in the chain of events during an emergency medical problem, one can see that to concentrate solely on one of the many elements offers no hope for long-term success. There have recently been some highly sophisticated efforts to tackle the problems of emergency transportation by the use of helicopters and the problems of intensive hospital treatment by the use of very sophisticated trauma centers. Yet none of these efforts has produced a significant change in the delivery of emergency medical services, the reason being that there are numerous causes to the problems in emergency care and they require numerous solutions. It is this concept of multiple factors in an interconnected chain of events that offers the best key to understanding emergency medical services (ref. 4). It is also this interconnected chain of events that lends emergency medical services to fragmentation and uncoordinated efforts.

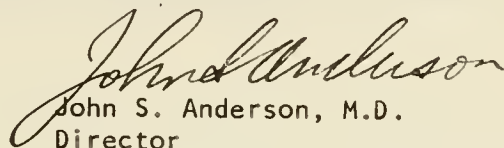
The overall necessary coordination to bring together local services such as ambulances, police departments, sheriffs' offices, fire departments, highway patrol and hospital emergency departments can best be accomplished through the development of local emergency medical services councils (ref. 1). The elimination of fragmentation of effort can do a great deal to improve emergency medical services at a minimum cost and allow local communities to find solutions to their own emergency medical services problems. This approach can best offer long term solutions to the multiple problems in the delivery of emergency medical services.

Studies have shown that the typical annual per capita expenditure for police protection is \$30, yet relatively few persons actually suffer from a violent crime; fire protection costs each person about \$24 per year, yet few persons perish by fire. Complete emergency medical services could be achieved, it is estimated for \$10 per capita year or 2.5% of the health dollar. Yet in the United States



In 1971, the total cost of accidental injuries, which includes wages lost and medical expenses, totaled over 18 billion dollars (ref. 3). In Montana, saving 180 lives each year would represent a savings of \$38,700,000 in productivity.

One may ask, "How hollow is a victory in the battle against disease and disability when we save teeth in dental programs, correct speech and hearing problems, examine eating and nutritional habits, foster workable family planning programs, dry out alcoholics, and enforce hospital construction codes while we lose lives in homes and on highways to medical emergencies?" In Montana, premature death and disability must no longer be the neglected disease of our society. We simply cannot afford it to be.

A handwritten signature in cursive script, reading "John S. Anderson".

John S. Anderson, M.D.  
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## COUNCILS

The Montana State Department of Health and Environmental Sciences is attempting to meet emergency medical services needs through an organized program designed to help communities help themselves through the sponsorship of local emergency medical services councils.

The emergency medical care system has three major objectives: 1) resuscitation and maintenance of life; 2) transportation of the patient; and 3) rapid diagnosis and treatment of the medical problems. Two variables operating within the system are: 1) the time frame within which the emergency care is provided; and 2) the quality of medical care available and delivered by medical and allied health personnel. Emergency medical care may be rendered within the system by members of the general public, law enforcement officers, ambulancemen, special rescue groups, other allied health personnel, nurses, and physicians.

This care is provided through a complex framework of transportation, communication, and medical care subsystems which also include such services as law enforcement agencies, fire departments, and educational institutions. The system may be a consolidated whole coordinated by a local Emergency Medical Services Council, or it may be a network of individual, isolated, or overlapping services.

In Montana, local emergency medical services have evolved with little regard to the formation of unified statewide, areawide, or even local systems. The result has been to place vital functions in the hands of competitive organizations both public and private. For example, in one Montana county, the following agencies are concerned with some aspects of the local emergency medical system:

1. Private ambulance companies
2. City fire department
3. County volunteer fire departments
4. City police department
5. County sheriff department
6. Montana Highway Patrol
7. City-County Health Department
8. County hospital
9. University hospital
10. Private hospitals
11. Civil Defense
12. Montana National Guard
13. U.S. Forest Service
14. Montana State Department of Natural Resources
15. American Red Cross
16. Nurse practitioner clinic
17. Private physicians' offices
18. National Ski Patrol

In some cases, different agencies utilize varying transportation systems served by a variety of communication networks which are not necessarily compatible. Because of this, the citizen may encounter problems in even gaining access to the system, even though it is to varying degrees functioning



and available. By coordinating the emergency medical efforts of these agencies, patient care during both daily emergencies and large disasters will be improved.

The initial step in the development of an effective emergency medical services system is to acquire the cooperation and involvement of all appropriate agencies and health facilities. The local EMS councils are a recommended means to bring together the leaders who provide emergency health care, planning, education, and funding.

It is recommended that these specialized planning organizations for emergency services be closely linked to any areawide organization that is also planning for comprehensive health services, such as Comprehensive Health Planning.

There are four Comprehensive Health Planning "B" agencies or areawide councils to which the local EMS councils may relate. If the local EMS council wishes to affiliate with the "B" agency, it will be considered a committee of the Comprehensive Health Planning areawide council.

The local EMS councils' service area may encompass a city, a county, or a region. It is usual that the catchment area and political boundaries are not coincident. What constitutes a functional service area, and what constitutes an appropriate organization for planning must be determined locally.

The development of an effective EMS system demands a high degree of shared community responsibility by all agencies involved. Of high importance to the success of the councils is the involvement of hospitals in the planning effort. Other council members should include: ambulance services, medical society, nurses associations, public health department, sheriff, Highway Patrol, communications experts, news media, and representatives of the public.

The effectiveness of an EMS system is dependent upon the interest and involvement in the council by the political structures in the service area. If the county commissioners or mayor do not sanction the council and its activities, it will be powerless and accomplish little.

The local councils should assist in procuring equipment, constructing facilities, and providing for optimal emergency health care on a day-to-day basis as well as in disasters or national emergencies. Councils also should implement EMS improvement measures and receive the benefits of national and state programs devoted to emergency medical services. These local councils should provide to the Governor's Advisory Council and the State Department of Health and Environmental Sciences "grass roots" insight into local EMS problems and needs. In addition they can provide valuable inventory resources to the state EMS staff.

Regional advisory councils need to be developed to coordinate regional EMS subsystems which would necessarily revolve around major hospital facilities and encompass the local EMS councils within their service area. The regional councils also would assist in the classification of hospital emergency departments and establishment of patient referral systems.



Active local EMS Advisory Councils must be established and maintained to insure that the various systems receive proper funding for equipment and operations.

The local councils should meet at least every two months, or monthly if possible, and should deal with a specific agenda. Committees can be formed to deal with specific topics such as:

Training. This committee should be concerned with the establishment and function of local emergency medical technician courses as well as pertinent refresher courses for all provider agencies and first-aid instructors. It should also be concerned with the level of first-aid training for police and fire personnel and the extent of first-aid training among the general public.

Communications. The function of this committee should be to coordinate emergency medical communications systems, both on a daily operational basis and in preparation for disasters. In addition, the committee should address itself to the question of how the individual patient enters the local EMS system.

Transportation. This committee is responsible for designing and monitoring a general plan for the area's emergency medical transportation system. Its general area of concern may include: ambulance equipment; the number of trained ambulance personnel available and the level of training they have received; emergency driver training for emergency vehicle operators; the number of such vehicles available both part-time and full-time, and their placement within the community; and the review of trip records for ambulance runs.

Emergency Medical Facilities. The members of this committee should be hospital emergency department personnel and hospital administration. This committee will deal with the problems of the hospital emergency department and its ability to respond to the emergent patient. It would also necessarily need to address the problems of rapidly increasing numbers of out-patient visits to the emergency department.

Organizational Committee. This committee should function to coordinate the activities of the other committees and to assign problems to them which are relevant. The membership of this committee should consist of the chairman of the council and the chairman of each committee.





## EMS TRAINING

The training requirements in an effective EMS system are found in three general areas: (1) broad-based training for the general public in first aid; (2) advanced first aid and EMT-Ambulance training for ambulance attendants; and (3) professional training for nurses and physicians.

A lay person is often the first on the scene of a medical emergency and must be able to provide initial first aid to the victim until help arrives.

Persons whose occupations routinely bring them into contact with critically ill or injured persons must be trained in first aid at a high level. This would include policemen, firemen, lifeguards, rescue squad personnel, ski patrollers, ambulance attendants, athletic coaches, school nurses, bus drivers, and workers in high-risk industry.

Medical professionals in hospital emergency departments require intense specialized training in emergency medical care.

Any examination of EMS training needs must take into consideration the fact that Montana is basically a rural state. Planning for emergency services must be based on consideration of the separate problems and resources of rural and urban areas. In rural areas, of the persons who die within the first 24 hours after the onset of injury or acute illness, a large number are dead or moribund when they reach the hospital. It has been shown that the provision of proper care at the site of illness or injury, and while enroute to the hospital can save lives (ref. 2, 9 & 11).

One study (Waller, et. al., 1964) has indicated that for most types of fatal injuries, those injured in rural areas has lower survivability within the first hour. In addition, of all persons injured in urban areas who died within the first hour, 37% expired at the site of injury; whereas, in the rural areas fully 90% of those who died during the first hour were still at the accident site. The higher percent of deaths at the accident site in rural areas was not attributed to greater inherent severity of such crashes. In the urban accidents resulting in death, 53% of the injuries thought to have caused death were determined to be probably non-survivable, whereas only 38% of such injuries in rural areas were probably non-survivable. Three hundred and fifty-three or 55.5% of Montana's accidental deaths in 1971 occurred outside of city limits and outside of institutions. The emergency care given at the scene of the emergency and during transit can be vital to the survival of the victim.

Another rural EMS study (ref. 10) has found that among persons suffering from cardiovascular or respiratory diseases, who were carried by ambulance ten or more miles, the survivability was significantly lower than among those carried less than ten miles. The importance of care provided at the scene and during transportation to the hospital is again emphasized.





Also, highway accidents involving alcohol tend to occur at night between the hours of 9:00 p.m. and 6:00 a.m.<sup>1</sup> This peaks between 11:00 p.m. and 3:00 a.m. when traffic is lightest, and tends to involve single vehicles. Many of these serious accidents tend to occur when staffing is least adequate in hospitals, law enforcement agencies, and ambulance organizations. The combination of delay in discovery and emergency services not functioning to their optimum daytime effectiveness underlines the need for the general public to be trained in emergency first aid.

#### BROAD-BASED TRAINING FOR THE GENERAL PUBLIC

There are three broad-based training programs designed to train the general public in first aid. These include American National Red Cross First Aid, Bureau of Mines First Aid and Medical Self-Help. Each of these programs has its particular training function and objectives, and each operates under a separate mandate. However, their common overall objective remains to improve the level of first-aid training among the general public. By coordinating their efforts and sharing each other's resources, the effectiveness of first-aid training programs in Montana can be improved.

The Emergency Medical Services Bureau of the State Department of Health and Environmental Sciences is prepared to serve these agencies in the overall coordination of their individual training activities, optimally by acting as a clearinghouse for first-aid training information and requests. More important, overall program evaluation of the first-aid training needs of the general public can be provided by the Bureau to the agencies on an ongoing basis.

#### SPECIAL SERVICES TRAINING

Select groups of persons require first-aid training at levels beyond the standard first-aid courses recommended for the general public. Their training needs, however, do not require the same level of skills as ambulance attendants and their required training should be less than EMT-A. Law enforcement personnel, firemen, ski patrolmen, and search and rescue volunteers are apt to be the first respondents to the scene of a medical emergency and they must be able to provide a higher level of care to the patient until the ambulance arrives.

Instruction utilizing the newly-developed 50-hour ANRC Advanced First Aid course is a suggested means of providing this intermediate level of first-aid training. This course is additionally desirable in that it does not require a physician instructor, as does EMT-A training.

#### AMBULANCE ATTENDANT TRAINING

##### General Requirements

In March, 1972, the state passed an ambulance licensing law<sup>2</sup> requiring that all ambulance personnel be trained and hold current certification at the

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<sup>1</sup>Source: Montana Highway Information System, Dept. of Highways, 1972

<sup>2</sup>See Training Appendix - State Ambulance Licensing Law.



level of American Red Cross Advanced First Aid or its equivalent. This minimum training level, however, is inadequate because it does not prepare ambulance personnel to cope with many medical emergencies.

In Montana, a person is required to have 10 to 12 months of training, or at least 2,000 hours to be a licensed cosmetologist. Barbers are required to successfully complete nine months of school and serve a one year apprenticeship. The minimum training requirement for ambulance attendants amounts to 26 hours of first-aid instruction.

TABLE 1

TRAINING REQUIREMENTS OF SIX LICENSED OCCUPATIONS<sup>3</sup>

Occupation	Minimum Training Requirements by State Law
Plumber	5 year apprenticeship
Cosmetologist	2000 hours in 8-10 months
Barber	9 months training & 1 year apprenticeship
Masseur	1000 hours
Hearing Aid Dispenser	6 months traineeship
Ambulance Attendant	26 hours

This basic requirement of only 26 hours of training for ambulance attendants is particularly inane when one considers the tremendous number of life and death situations that annually confront them. Ambulance attendant training in Montana must be accentuated. It is imperative that ambulance work be seen as a true occupation requiring intensive training and skills. The citizens of Montana can no longer afford to rely upon untrained and under-trained ambulance personnel in times of medical emergency.

Emergency Medical Technician-Ambulance

The American Red Cross Advanced First Aid course should be considered as a basic requirement, but it should be recognized that it is far from constituting adequate training for ambulance attendants. Ultimately, it may be hoped, all ambulance attendants in Montana will have at least two years of first-aid training such as now being utilized in California. In the meantime, the Department of Transportation's 81-hour Emergency Medical Technician-Ambulance (EMT-A) course<sup>4</sup> is being emphasized. As discussed on

<sup>3</sup>Source: Revised Codes of Montana, 1947.

<sup>4</sup>Basic Training Program for Emergency Medical Technician-Ambulance, prepared by Dunlap and Associates, Inc., Darien, Conn. 06820 for the National Highway Traffic Safety Administration under Contract FH-11-6367. Entitled: "Emergency Medical Service - Entrance Level Training."





pages 8 and 9, the need for well-trained personnel at the scene of medical emergencies and during transportation to medical facilities is critical to the saving of lives. Licensed physicians and nurses are usually not available to fill the need for this type of patient care outside of the hospital. Life-saving techniques can be performed by highly trained personnel other than physicians and nurses. However, this type of technician should and must be licensed for the protection of the patient as well as the medical profession. The need for legislation allowing for the use of these types of life-saving skills is obvious and apparent. It is recommended that consideration be given to legislation which would allow for the formation of an Emergency Medical Technician-Ambulance Licensing Board and licenses given to those who have completed a course of instruction as established by the Board.

Since April, 1971, EMT courses have been offered at 21 sites in the state. Twelve of the courses have been completed with a total of 330 persons being EMT certified. As of January 1, 1973, 237 of that total were ambulancemen. Approximately 800 more people currently employed as ambulance attendants should also be trained in EMT-A. Unfortunately, 280 or 27% of the attendants did not even have, in spite of state law, Advanced Red Cross or its equivalent training at the time of inspection.<sup>5</sup>

The training of Emergency Medical Technicians is more than the teaching of advanced first aid. This program is designed to develop the ability of the EMT-A's to make valid judgements, and properly apply his skills in the field on the basis of physiologic observations.

The Montana State Department of Health and Environmental Sciences has adopted the position taken by the National Academy of Sciences concerning the need for the guidance of EMT training by physicians. The Academy asserts that there must be "assignment of responsibility for conduct of training programs and certification of graduates to a physician who would supervise a teaching faculty to include physicians, American Red Cross instructors, policemen, firemen, experienced ambulance operators, and experienced rescue squad instructors." (ref. 8) Available, competent instructors (including registered nurses who are often overlooked), regardless of agency or origin, should be used as instructors.

There is an obvious limit on the availability of manpower and supplies to teach EMT-A classes in Montana. It is, therefore, mandatory that student and teacher supplies be brought to the instructors. The hospital-based EMT training adequately satisfies this requirement, and this concept will be expanded upon.

Course coordinators, both professional and lay, should have periodic statewide meetings so that there is as much commonality in the courses as is compatible with personality differences.

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<sup>5</sup>Source: 1972 Montana State Department of Health Ambulance Inspection Reports.



A cadre of highly motivated and experienced instructors, knowledgeable in the application of first-aid techniques, should be created to assist in instructing the EMT-A courses. These people would provide the students with information based upon actual on scene experiences--information which would be very difficult to obtain from other sources.

To assure the continued availability and interest of such cadre, stipends should be provided them, at state rates, for their participation in the EMT-A training program.

At this time, 10 of the 81 hours of EMT-A instruction are devoted to in-hospital training under adequate medical supervision. Additional hours, as necessary and practicable, will be encouraged to enlarge the scope of emergency medical capabilities in any individual locality. Also, it is recommended that in-hospital training be tailored to specific in-hospital experience of not less than 10 hours, and that this training be given in Montana in-so-far as possible.

Because of the variations among the first-aid training backgrounds of the EMT-A students, the level of training given is "over the heads" of some students. In order to improve the quality control of EMT-A courses, it is recommended that all course applicants have advanced first aid training as a prerequisite. In addition, a passing score on a standardized test at the end of the course must be achieved before certification is granted.

Professionalization of EMT-A. In order to professionalize the EMT-A and to recognize the growing importance of emergency medical services, individuals who qualify should be known as Emergency Medical Technician-Ambulance (EMT-A). This title should be reserved only for those who have received adequate training, passed a qualifying examination based on the educational program and achieved certification under a currently approved program. As recommended by the Airlie Conference on emergency medical services, any subsequent change in status should be designated by a subtitle of the general classification, "Emergency Medical Technician."<sup>6</sup>

One of the problems in demanding that ambulance attendants attain high levels of training (up to two years of study) is that there has been little occupational development. Without positions that pay salaries commensurate with the skills required, motivation to obtain the training will not be strong.

It is strongly recommended that hospitals which have ambulance service replace orderlies with ambulance attendants trained as EMT-A's who can be of great value to the hospital when not involved in an ambulance call. The hospital-based ambulance attendants participate in providing

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<sup>6</sup>The terms "paramedic," "physician's assistant," "nurse-practitioner," or "medic" should not be applied to ambulance attendants. Ambulance attendants who have exceeded the 81-hour Department of Transportation sponsored EMT-A course should not be labeled "paramedics." Although "paramedic" training courses are being planned for Montana, the ambulance or rescue personnel completing it should carry the occupational title of EMT-A.





continuity of care from the time of the medical emergency to actual hospital discharge.

Under proper supervision, the EMT-A could perform selected tasks beyond the scope of routine orderly work: cardiac monitoring; preparing and dressing wounds; inhalation therapy; assisting with resuscitation; minor surgery; nasal packs; applying splints; preparing urethral smears; receiving telephone reports; taking electrocardiograms; and operating the emergency communications equipment (ref. 6). Ex-military corpsmen, who have had extensive training in emergency care, would be ideally suited for this role.

As others (ref. 5) have pointed out, the lack of professional status is one of the reasons frequently given for not entering into this aspect of the health field. Every effort must be made to promote the occupational development of EMT-A, and to foster its professional status.

Women as EMT-A's. Contemporary EMT-A history in Montana has been almost exclusively men oriented. The State Department of Health and Environmental Sciences recommends that women be encouraged to play an important and active role in this phase of health care. Steps will be taken to encourage women to take the EMT-A training course and become involved in ambulance service.

Proposed Legislation. Although every effort will be made to improve the level of training of ambulance attendants in Montana, it is not felt that legislation making EMT-A training mandatory for ambulance personnel should be made at this time.

### MEDICAL PERSONNEL TRAINING

Because the hospital emergency department's educational system is a critical determinant of the quality of care provided, attention must be given to its improvement. Emergency departments are experiencing a rapid expansion of technical knowledge and specialization of emergency medical care. The successful employment of lifesaving techniques requires adequate training of the emergency department staff.

The effectiveness of the emergency department depends upon its specially trained staff. In Montana, hospital emergency departments exist where the physician on call is neither immediately available nor knowledgeable in the distinct problems of emergency health care. When physicians are not immediately available, other hospital personnel must provide emergency care to the patients until the physician arrives. In addition, gaps exist between the innovation of lifesaving techniques and equipment, and their practical application by emergency medical personnel in the field.

### Physician Training

Although most of the physicians, who are qualified in one of the emergency specialties and routinely work in the emergency departments, are well trained to handle emergency cases, many of their colleagues are not (ref. 3 & 11). The rotation of physicians brings in to the emergency department those who have had little or no general emergency care training, i.e., general practitioners, gynecologists, proctologists, etc.



To improve the level of training of these doctors, several steps are recommended. Persons and associations involved with EMS should encourage medical schools to implement a formal emergency medical care course in their curricula with added emphasis upon traumatology. More symposia and workshops on emergency care should be made available for continuing education for physicians who expect to be rotated into emergency departments. More short-term clinical traineeships in emergency care should be available to community physicians. Physicians skilled in emergency care should be encouraged to share their knowledge with their colleagues who rotate into the emergency department from a roster.

In recent years, medical critiques of various kinds have been conducted following every major disaster, yet in few areas of the nation or state are the daily small disasters analyzed. A daily critique on emergency department management of the emergency incidents would serve to define weaknesses within the system and encourage further upgrading of emergency medical training of physicians. Hospital medical staffs, through their Utilization Review Committee will be encouraged to undertake such studies.

### Nurse Training

Trends in the organization of patient care service areas within the hospital are placing increased demands upon emergency department nurses. To meet those demands, in-service education programs for both graduate nurses, and L.P.N.'s must be continued to improve their abilities to deal with emergency patients. In developing in-service training programs for emergency nursing, the nature of the medical problems encountered in the emergency service must be considered. For example, self-poisoning is a serious problem and the value of prompt resuscitation of poison victims, trauma patients, and those suffering from myocardial infarction must be emphasized.

The in-service programs must be an adjunct to the skills individual nurses bring to their position. Since nursing in an emergency department involves the ability to recognize an impending emergency as well as to provide prompt and proper attention in an established emergency, the nurse must have a thorough understanding of emergency medical procedures (ref. 4).

For example, there are three prime targets in treating cardiopulmonary arrest: (1) the rapid restoration of circulation and respiration; (2) the prevention of brain damage; and (3) the eventual discharge of the patient from the hospital in satisfactory condition. It is generally agreed that the critical factor in treating these patients is time. The period from circulatory failure to initiation of resuscitation efforts can be reduced by a combination of monitoring equipment and personnel trained to recognize a pre-arrest condition and call for assistance prior to the actual arrest. It has been demonstrated that the improvement in survival statistics in hospitals is directly related to the development of a coronary care training program for nurses (ref. 7 & 1).





In Montana, in-service training of nurses is being accomplished by four efforts. One is the learning center hospital concept. The Montana Hospital Association, which sponsors the Learning Center Hospital Program, now has five primary and three secondary learning center hospitals for in-service training of hospital personnel. These hospitals are responsible for all of the in-service training for all of the hospitals within their district. Some of these hospitals are using, among other in-service training programs, the U.S. P.H.S. developed "Door to Recovery" kit. It is a structured training program for use within the emergency department for nurses, physicians, licensed practical nurses, and nurses' aids.

Another nurse training effort consists of a series of training projects, consisting of seminars and traineeships, sponsored by Mountain States Regional Medical Program. The Montana Nurses Association also sponsors continuing education workshops for emergency department nurses. Fourthly, the Montana Heart Association has been, and will continue to be, instrumental in nurse training in CPR and coronary care unit work. Each of these programs has plans to expand its services to improve nursing capabilities in emergency care. In addition, the curricula of the schools of nursing in Montana should be enhanced to reflect the growing needs in emergency health care.

The Montana State Department of Health and Environmental Sciences advocates, as a part of an overall review of their E.D. capabilities, that hospitals review physician response time in reaching the patient so that, if necessary, appropriate training programs for non-physician staff may be designed. It is strongly recommended that hospitals, hospital medical staffs and hospital emergency department R.N.'s develop and implement standing orders to be used by R.N.'s in beginning basic lifesaving and life sustaining procedures in the physician's absence. As an adjunct, refresher courses to enhance nursing skills in emergency care should be required.



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## TRANSPORTATION

### GROUND TRANSPORTATION

"... the emergency ambulance should be well equipped and manned with trained personnel to respond effectively to any emergency due to injury or acute illness." (ref. 8)

Rural emergency health care presents unique problems not to be found in an urban setting. In Montana, they are: (1) limited emergency medical services; (2) delay in the discovery of the medical emergency; (3) the long distances to the hospital emergency department; and (4) the large seasonal influx of tourists.

Currently, 102 ground ambulance services operate within Montana. The most common types of service are volunteer (39) and local government owned (36). Commercial ambulance services (16) are found predominately in urban areas. Only seven ambulance services are based at hospitals.<sup>1</sup>

The majority of ambulance services in rural Montana are staffed by city and county volunteers (70).<sup>2</sup> Of these services, 12 (11%) are manned by volunteer fire department personnel. For many small communities, such an arrangement places the service within an established organizational structure that provides delineated lines of authority, and a measure of personnel control.

During the summer months in Montana, the number of emergency runs increases, reflecting increased population mobility and the influx of tourists. Medical emergencies related to highway accidents increase sharply during weekends and from 11:00 p.m. to 3:00 a.m. Night emergencies, while fewer in number, often are more serious in nature (ref. 10). These problems place special demands on ambulance services which subsequently influence their ability to respond to emergencies.<sup>3</sup>

In 1972, there were approximately 17,000 runs made by ambulance services. From the 1972 Montana Ambulance Survey, it was apparent that approximately 49% of the total ambulance runs answered were for emergencies.<sup>4</sup> Emergency<sup>5</sup> trips accounted for 37% of the answered runs made by commercial services, which are located primarily in urban areas. In rural areas, 64% of local government and 88% of volunteer ambulance services answered runs were emergencies. These figures reflect the differing roles that ambulance services play in urban and rural environments. Because of the high percent of emergency runs, it is imperative that rural ambulance services be well equipped and staffed by competent, well-trained personnel.<sup>6</sup>

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<sup>1</sup>See Transportation Appendix, Table 3.

<sup>2</sup>See Transportation Appendix, Table 4.

<sup>3</sup>See Transportation Appendix, Table 14.

<sup>4</sup>See Transportation Appendix, Ambulance Survey.

<sup>5</sup>Emergency is defined as any condition that requires immediate medical attention.

<sup>6</sup>See Transportation Appendix, Table 12.



Of the total emergency runs made, 12.8% were for emergency transfers outside of the ambulance services' usual operational area.<sup>7</sup> Presently, ambulance services are often hampered in emergency transfers because of poor communications, lack of coordination, and inadequate transportation policies.

"The relationship of the ambulance service to the hospital can be the key to the success of an ambulance service . . . . There is a vital need for closely coordinated efforts between ambulance services and hospital emergency departments." (ref. 8)

From the ambulance survey,<sup>8</sup> 9.5% of the ambulance services do not routinely notify the hospital prior to the arrival of an emergency patient. Of the ambulance services who routinely notified the hospital, 73% did so through the telephone land line.<sup>9</sup> In the majority of cases, the hospitals have no prior knowledge of the patient's condition or the total number of emergency cases to expect. Furthermore, because of inadequate communications and operating procedures, the ambulance attendants do not receive physician instructions either at the scene of the emergency, or while enroute to the hospital.

Few ambulance trip reports are being used to provide pertinent medical information on the patient's condition at the scene of the emergency and while enroute to the hospital.

Seventy-one percent of the ambulance services in Montana receive some type of subsidization,<sup>10</sup> which demonstrates the inability of most rural ambulance services to independently maintain a financially sound service. In Montana, counties may levy a one-mill tax for the purpose of improving their ambulance service; however, few have taken advantage of this tax.

In general, rural ambulance services routinely have a low utilization rate and services' high costs have to be absorbed by a small resident population (ref. 4). In Montana, the impact of tourism and other transients places a further burden upon rural ambulance services. Those areas which are faced with the high cost per capita for an adequate ambulance service can expect some limited assistance from the state or federal government. In the past, limited direct federal aid has been provided by the Office of Highway Traffic Safety.<sup>11</sup> However, in the future the major burden for the financing of ambulance services will be met locally.

Of economic significance to ambulance services is the high insurance premiums many have to pay for adequate protection. The premium rates vary to an extraordinary extent and are not necessarily based upon the size of the service, the area served, or the number of completed runs.

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<sup>7</sup>See Transportation Appendix, Table 6.

<sup>8</sup>See Transportation Appendix, Ambulance Survey.

<sup>9</sup>See Transportation Appendix, Table 11.

<sup>10</sup>See Transportation Appendix, Table 10.

<sup>11</sup>From FY 1968 through FY 1973, the Highway Traffic Safety Office has expended \$336,500 for radio equipment and ambulance vehicles (\$174,000 for radio systems, \$162,500 for vehicles).





In Montana, the equipment carried by ambulances varies to an extraordinary extent. Only 6 (5.9%) of the services carry the equipment recommended in the 1967 ACS minimal equipment list and none meet the 1970 ACS equipment recommendations. However, many services do carry specialized equipment, such as air splints, OB kits, and blood pressure equipment.

#### AIR TRANSPORTATION

Because of Montana's immense size, sparse population, and varied geography, aircraft are an important auxiliary for the transportation of emergency medical patients.

Military and government agencies will provide a limited amount of assistance for emergency transfers and for emergency rescue. The United States Air Force, Montana National Guard, and the State Aeronautics Commission do offer their assistance when it can be established that an existing ambulance service is unavailable or unable to provide transportation. The military requires a written affidavit showing cause for the use of military aircraft as air ambulances.

Thirty-two private air ambulances currently operate within Montana. While the majority of aircraft runs are for routine transfers, air ambulance services are increasingly being used for emergency transfers. The better air ambulance services are located in the urban areas of Montana.

The private air ambulances operate primarily as air taxi services, and look upon the transportation of emergency medical patients as an auxiliary to their other services. Accordingly, few aircraft are routinely supplied with adequate medical equipment and supplies. Air ambulances are often involved in the transfer of emergency patients to facilities equipped to handle emergency surgery and care. Management problems and mortality rates can be high for this type of patient. Furthermore, many different types of aircraft are being used, some of which are totally inadequate for the safety and comfort of the emergency patient.

The air ambulance services are not staffed by medically trained personnel. Generally, the air ambulance companies require the person or agency requesting their service to provide the medical attendant as well as emergency medical equipment, which appears to be the most practicable method.

Currently, only one private air service operates helicopters (Bell Jet Rangers) which can be considered adequate for the transportation of emergency medical patients. The use of these helicopters is generally restricted to the western portion of Montana and northern Idaho. In 1972, this service made 19 emergency helicopter runs for the public, all of which were to extract persons from isolated or inaccessible sites.

Laws and regulations affecting air ambulance operations are, with two exceptions, nonexistent. The pertinent FAA regulation states that any service offering air ambulance employment must hold an air taxi operator license, and have insurance coverage as required to hold such a license. In addition, the Veteran's Administration has certain minimum requirements for air ambulances transferring patients from or to V.A. hospitals.



## RECOMMENDATIONS

### Ambulance-Hospital Relations

"The proper treatment of the patient should be a guiding consideration in all operations." (ref. 2)

A direct correlation exists between patient care administered before entering the hospital and morbidity-mortality factors after admission. Much greater responsibility must be assumed by the medical profession in establishing closer ties between the ambulance service and the emergency department. It must be recognized that ambulance services "function as a direct extension of the medical care team." (ref. 8)

It is recommended that whenever possible the ambulance services be based and operated at the hospital. This ideal arrangement would fulfill the criteria that the ambulance service is an integral part of the hospital's function of delivering emergency health care. It would also provide opportunities for the maximum use of hospital personnel by using them in the ambulance service. Under such an arrangement, specially trained registered nurses, L.P.N.'s and orderlies could be utilized as ambulance attendants.

Because of local conditions, the ambulance service often cannot be based at the hospital. However, this should not preclude close ties being established between the ambulance service and the hospital. The most important component of these ties is guidance of ambulance medical activities. It is recommended that the local EMS council or Emergency Department Committee perform a critique and advisory role relating directly to the ambulance service. A physician should have supervisory influence over the medical aspects of the ambulance service.

Ambulance-hospital relations can be further improved by: (1) utilizing registered nurses in the training of EMT-A's; (2) include the ambulance service in the hospital disaster plan; (3) develop an effective radio communication system between the ambulance and the hospital; (4) include EMT-A's in the educational programs of the local Emergency Department Nurses Association chapter; and (5) utilization of an accurate trip report form.

### Trip Report Form

A standardized trip report form should be adopted by all hospitals and ambulance services in Montana. The trip report form suggested in this plan <sup>12</sup> is oriented towards the patient. The form is to be initiated by the ambulance attendant at the scene of the emergency and follow the patient through the treatment phase. It is designed to become a part of the patient's in-hospital record.

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<sup>12</sup>See Transportation Appendix, Trip Report Form.





Information on the form will be of value to emergency department personnel in determining the extent of illness or injury, and immediate medical action that must be taken. The form includes information on time factors, type of injury or illness, vital signs, first-aid provided before the ambulance arrived, and first aid provided by the ambulance crew.

The form can be used by ambulance services as their own record or trip ticket. Furthermore, the checklist on the form is a continuing training aid because it is a constant reminder of essential things the attendant must do.

Selected, non-confidential information on the form can be used by the Montana State Department of Health and planning agencies. Information from the form would be an effective indicator of the proper distribution of ambulance services and assist in determining the value of current regulations and the degree to which they are being met. These records also would allow local EMS councils to establish performance indexes for their own emergency medical services.

Legally, the form also could provide some protection against malpractice suits.

### Air Ambulance

The transferring of patients by ground ambulance from a community hospital to a major referral center can produce special problems for a rural area. Such transfers often necessitate traveling great distances and, consequently, many rural areas are without adequate ambulance coverage for long periods of time. It is recommended that air ambulances be used whenever practical for the transfer of patients. By utilizing aircraft for many transfers, the rural community can be insured of adequate ground ambulance coverage.

However, the use of an air ambulance requires that the aircraft and its operation meet certain requirements. The following is intended as recommended guidelines for the operation of air ambulances beyond the requirements of Montana aeronautics laws and regulations.<sup>13</sup>

Coordination of Air Transportation. Hospital administrators, physicians, and ambulance services should be aware of the air ambulance resources in their areas and should make prior arrangements for the use of aircraft.<sup>14</sup>

It is essential that the air ambulance attendant obtain all pertinent information on the patient before transportation is arranged. This information should be attained personally from the attending physician and should include:

1. History of injury or illness;
2. Patient's condition;
3. Weight and size of patient;
4. Specific physician instructions.

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<sup>13</sup>Any aircraft operator offering an air ambulance service to the public must hold an air taxi operator license and have liability insurance. Sections 1-311, 1-321, 9-101, 9-102, Montana Aviation Laws and Regulations.

<sup>14</sup>See Transportation Appendix, Air Ambulance Directory.



Complete medical records should be transported with the patient including:

1. Patient's chart;
2. X-ray film;
3. Laboratory reports.

#### Recommended Aircraft Dimensions.

##### 1. Interior dimensions:

- a. Headroom - minimum of 48" at the head of litter.
- b. Width - minimum of 44".
- c. Length - sufficient to accommodate a standard stretcher.

2. Entry: the door should be so constructed that a patient on a stretcher can be safely loaded and unloaded. Suggested minimum dimensions of the doorway are: 43" width and 38" height.

3. Restraining devices should be included which will securely fasten a stretcher or incubator to the floor of the aircraft.

Communications. All air ambulances should be able to maintain constant radio communications with hospital base stations on the emergency frequencies (155.280 and 155.340).

Personnel. Since air ambulances are often involved in emergency transfers, the attendant must be capable of performing any medical task necessary to maintain life. The air ambulance attendant should be at least an EMT-A experienced in emergency care.

The aircraft operator should have the experience to pick the best possible routes and adapt to low altitudes when necessary.

Equipment. It is recommended that the mobile care team carry the following minimum equipment:

1. Cot or stretcher which can be elevated, including mattress.
2. A short board (16" x 24") for external cardiac compression.
3. Portable oxygen capable of delivering oxygen at 10 liters/minute for one hour (either one type E cylinder or two type D cylinders). The unit should include a yoke, pressure gauge, flowmeter (not gravity dependent), delivery tube, and oxygen mask.
4. Artificial ventilation devices should be hand-operated, portable and independent of a supply of oxygen. The recommended self-refilling bag-valve-mask unit permits proper timing of long inflations and assessment and correction of ventilation volumes, airway obstruction, mask lead and accidental inflation of the stomach. Although independent of compressed oxygen, the bag-valve-mask unit should permit delivery of 100% oxygen during spontaneous and artificial ventilation. In addition, the unit should have a standard universal adapter (15 mm tracheal tube/22 mm mask), a reliable non-rebreathing valve, and transparent masks in sizes for adults, children, and infants; to allow the attendant to observe the patient's color and occurrence of vomiting and breathing (clouding during exhalation).



Oropharyngeal airways for adults, children and infants should be carried. Airways and masks for mouth-to-mouth ventilation in all sizes should also be provided. All airways should be the disposable plastic type.

5. The suction unit should provide vacuum and flow adequate for removal of thick pharyngeal secretions. It should be fitted with large-bore, non-kinking suction tubing and a rigid pharyngeal suction tip. Additional suction equipment that should be carried are: sterile suction catheters of various sizes for suctioning via tracheal tube; nonbreakable collection bottle; and a water supply for flushing tubes.

6. Blood pressure cuff and stethoscope.

7. I.V. holder.

8. Needle-syringe (20 cc) for suction.

9. Bite stick, flashlight, tape.

### Helicopters

Numerous studies have been conducted nationwide on the utilization of the helicopter in emergency medical services. One of the earliest studies (Dunlap, 1968) concluded that objective evaluation was needed to determine the feasibility of using the helicopter as an emergency ambulance vehicle.

An often stated advantage to the use of the helicopter is the reduction in response time. In one project (Pennsylvania, 1968), the helicopter completed 49 airlifts of victims to hospitals. The average response time for the missions was 19.5 minutes. However, this project concluded that the time factor was not critical in the majority of incidents.

Another project (University of California - Los Angeles, 1969) determined that the greatest potential for the helicopter was to be found in rural areas where ground ambulance response time was lengthy. This project, in addition, concluded that the helicopter could improve emergency transport for victims who are located 15 air minutes or more from the nearest ground ambulance.

From one study (Mississippi State University, 1969), it was determined that in a rural area less than 5% of all missions fell into the 50-80 mile range, while inter-hospital transfers were generally in excess of 80 miles. The highest frequency of missions flown to medical emergencies was within 25 miles of the helicopter base location. The speed advantage of helicopters over ground ambulances was greatest in inter-hospital transfers of approximately 80 miles or more.

The helicopter as an air ambulance is an extremely expensive method of transportation because of its low utilization and high operating costs (especially fixed costs). While the expense of the system is substantial, the high cost can be justified when the helicopter is operated as a rural remote area system and as a supplement to existing ground ambulance and law enforcement operations (Arizona State University, 1969).





Since rural areas generally have a small population base, the frequency of occurrence of medical emergencies are low. The infrequent demand for emergency transport, compounded by the initial high investment and continual operating costs of the helicopter, makes it ineconomical to operate a helicopter solely as an air ambulance in a rural area (University of California - Los Angeles, 1969). Many areas would find it advisable to utilize the helicopters for other services as well, especially in general law enforcement operations where it has proven quite effective.

A general complaint found in all projects dealt with the limitations of helicopters for emergency medical transport. The complaints ran from insufficient power and range to small and cramped interiors. While many types of helicopters are available, "Few of these are suitable for this type of work and none can be considered ideal."<sup>15</sup>

The use of the helicopter to extract emergency patients from remote or inaccessible sites is a reliable mode of transportation. It is anticipated that in the future private air service helicopters will continue to be used extensively for this type of service.

These demonstration projects have shown that helicopters can provide, under certain circumstances, reliable transportation for emergency victims. However, they also have demonstrated that the helicopter can provide service to only a small percentage of the population which are ill or injured. These projects indicate that it is not wise to invest in a helicopter ambulance service if the area's emergency medical services system is incomplete and fragmented. An inefficient emergency medical services system will deteriorate the ability of the helicopter to provide an adequate service, making the operation extremely expensive for very limited return in benefits.

The Military Assistance to Safety and Traffic (MAST) program was begun in July, 1970, and was intended to complement existing civilian emergency medical services with military helicopters and crews. Currently, five MAST programs are operating and as of June 30, 1972, had flown 1165 missions and carried 1433 patients. MAST is not intended to compete with existing or planned air ambulance service. As with other helicopter ambulance service projects, the success of a MAST program is directly related to the condition of an area's existing emergency medical services.

Heliports should be established at all major emergency hospitals. The Montana State Aeronautics Commission will provide technical assistance in the construction of such heliports.

#### Transport of High-Risk Infants

"The best transport vehicle for an infant is his mother's uterus."  
(ref. 5)

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<sup>15</sup>U.S. Department of Transportation, Helicopters in Emergency Medical Services, July, 1972, page 7.





The risks to the newborn are reduced considerably if the high-risk mother is transported to a center where she can receive adequate obstetrical care. However, this procedure is often an impossibility. The demands for the transportation of high-risk infants vary with local conditions, levels of specialization and available transport facilities. In Montana, approximately 1200 newborn children each year need special medical attention. It is estimated that 3% (36) require transportation from a community hospital to facilities offering specialized care.

A transfer should be considered when the known hazards of transport do not outweigh the possible advantages to be obtained at a specialized facility. Transfer is justified when patients require ongoing intensive care beyond the capabilities of the referring hospital with particular attention given to symptomatic low birth weight or preterm (less than 34 weeks) infants.

Transport Incubators. An incubator is not always needed to transport an infant. But if a child is small (less than 5 pounds, 10 ounces), or is possibly endangered by disturbed cardiorespiratory function, any possibility of convulsions or abdominal distension, then the child should be protected in an incubator. The incubator should provide good visibility of the patient's face, chest, and abdomen exposed. If oxygen is needed, the child will have to be in an incubator unless oxygen is supplied by mask or endotracheal tube.<sup>16</sup>

Hypoxia. Adequate oxygenation without interruption must be assured and all efforts must be made to avoid even a short episode of hypoxia.<sup>17</sup>

Visibility. The face and chest of the patient must be well-illuminated and unobstructed at all times. Often subtle signs will indicate the need for special attention, i.e., blocked airway, inadequate oxygen supply.

Identification. Reasonable and prudent measures should be taken to prove the infant's identity, and thus eliminate any potential confusion or legal complications.

#### Personnel.

1. Medical Personnel: the attendant should be at least a registered nurse experienced in emergency pediatric care. Medical personnel should have a working knowledge of: (a) electrical facilities required; (b) needed supplies and equipment; and (c) the possible effects of transportation so that decisions can be made on timing and duration of any delay.

2. Ambulance Personnel: should have the experience to: (a) know when to choose smooth roads and comfortable speeds; (b) avoid rapid acceleration and deceleration; and (c) anticipate and facilitate requests to stop the vehicle for any special need.

3. Aircraft Personnel: should have the experience to: (a) adapt to low altitudes when necessary; and (b) explain to attendant possible choices of route and timing.

4. General: all personnel should be trained in: (a) maintenance of

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<sup>16</sup>See Transportation Appendix, Incubators.

<sup>17</sup>See Transportation Appendix, Oxygen Equipment List and Special Equipment.



transport incubators and associated equipment; and (b) decontamination and other cleaning procedures.

Aircraft. Some types of aircraft can be useful in the transporting of high-risk infants, however, their advantages are dependent upon many local factors. Of primary concern is the amount of floor space for patient management, inconveniently located and small entry doors, and restricted headroom. For these reasons, the State Department of Health and Environmental Sciences is presenting guidelines on the minimum recommended interior dimensions of an air ambulance.<sup>18</sup>

Occasionally, aircraft used in the transport of high-risk infants should be pressurized because the decrease in barometric pressure and oxygen at high altitudes can present difficulties with certain high-risk infants.<sup>19</sup>

In many aircraft, additional lighting schemes must be devised to provide an adequate light intensity for observation of the infant. Furthermore, many aircraft require the installation of high performance heaters to maintain an adequate cabin temperature (approximately 82°F).

Regional Operations. It is anticipated that in the near future,<sup>20</sup> intermediate pediatric referral centers will be operating in Montana. The decision to transfer an infant from a community hospital to a referral center will depend upon regional considerations. These considerations may also determine time of departure, selection of attendants, the type of transport vehicle and routes to be travelled.

The efficiency of such regional operations will depend upon an established program of infant transfer under the leadership of either the regional referral center or a regional EMS council. Decisions on operational policies and agreements on transportation systems should be made locally to fit regional needs and requirements. The referral centers would receive calls and make the necessary arrangements for the prompt and safe transport of infants. After receiving the call from the community physician or hospital, the center will alert the medical care team which would travel to the community hospital. After evaluation and physician orders have been obtained, the child would be transported to the regional referral center.

It is recommended that transport incubators, auxiliary equipment and trained medical personnel be located at or near the referral center. The transport system should include both ground vehicles and aircraft. The aircraft would originate both from private fixed-based operators and, when necessary, from government agencies.

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<sup>18</sup>Because of restricted entry ways, few twin-engined, pressurized, commercial aircraft in Montana meet the minimum interior dimensions recommended in this plan. However, this should not totally preclude the use of such aircraft because less door space is needed for most transport incubators than with a stretcher.

<sup>19</sup>However, the partial correction of reduced atmospheric pressure at high altitudes may still allow a decreased oxygen tension to a low level and expansion of trapped gas in the tissues to life-threatening dimensions. See Transportation Appendix, Effects of Altitude on Ambient, Alveolar . . .

<sup>20</sup>The centers are being located in Billings, Great Falls and Missoula.





The EMS Bureau, with the assistance of the Maternal and Child Health Services Bureau, will assist the intermediate referral centers and transportation systems in establishing on-going operational policies. It also will assist in the distribution of pertinent information to hospitals and physicians on the services offered by the regional centers and identify available transport systems.

In addition, the State Department of Health and Environmental Sciences will provide monetary assistance in the purchase of transport incubators and special training for physicians and registered nurses in emergency pediatric care within the first year of implementation.

### Financial

Competent financing is vital in the development and maintenance of an adequate ambulance service. A community must examine the various means of gaining revenue for such a service. These sources would include: (1) developmental grants; (2) a subscription-type service; (3) local government participation; (4) hospital financial involvement; (5) charges made for services rendered; and (6) donations. The community will probably find that they cannot expect total financing from any one source, and must rely upon a combination of the above-mentioned sources.

A possible source of revenue, especially for volunteer services, is a subscription-fee program. Under such a program, a family would pay a basic yearly fee for either a set amount of free mileage or a specified amount of service. Such a system would not have to replace other means of gaining revenue, but rather could be used as an additional means of financing the service.

### Vehicle Design

Communities contemplating the purchase of a new ambulance can sometimes look to their own local automobile dealers. It is possible that certain van and carry-all type vehicles could be converted into adequate ambulances. However, the local community must contact the Emergency Medical Services Bureau to assure that this type of converted vehicle complies with state laws concerning ambulance design. In some instances, this type of ambulance could represent a substantial monetary savings.

Many vehicles, especially vans, can be converted to ambulances, and a number of private firms are available to provide the necessary conversion. It is anticipated that in the future, many ambulance services will be purchasing van and carry-all type vehicles and having them converted into ambulances. The State Department of Health and Environmental Sciences has the statutory authority to license and inspect all ambulance services in order that such services comply with state law. Before purchasing a vehicle, each community or service must contact the Emergency Medical Services Bureau, State Department of Health and Environmental Sciences, to receive guidelines and assistance in meeting state requirements.<sup>21</sup>

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<sup>21</sup> See Transportation Appendix, Ambulance Design and Legislation Appendix, Ambulance Licensing Law.





Equipment - Extrication, Resuscitation and Medical

In rural communities, equipment standards must be of a very high quality because emergency health care problems are often unique for this environment. The medical care and extrication equipment carried must be founded on the concept that the patient's immediate care is all important. It is also to be understood that the equipment carried by an ambulance must be proportionate to the ability and training of the attendant.<sup>22</sup>

It is recommended that the ambulance services and hospitals serving a local area adopt the Letterman Equipment Exchange system. The hospital would provide a replacement for any item in use when a patient is delivered by the ambulance service. In this manner, the ambulance is always fully equipped and can return to service quickly. Most importantly, this system would eliminate the unnecessary movement of the patient to retrieve equipment.

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<sup>22</sup>See Transportation Appendix, Services Carrying Specialized Equipment.



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## COMMUNICATIONS

"The emergency medical communications network has been called the backbone of an emergency medical services (EMS) system. Its implementation ties together the various elements of the total EMS system." (ref. 2)

The emergency medical communications systems consist of a mosaic of services which, to function properly, must completely interface with one another. The components of these systems are interdependent and must function together in identifying, coordinating, and implementing all community medical services (ref. 5).

Because of Montana's immense size and often great distances between medical facilities, special considerations must be given to regional and statewide communications systems. Currently, detailed engineering studies are being undertaken which deal with the regionalization of communications systems within the state. These studies, to be completed in late 1973, will encompass three topics: (1) areawide communications; (2) regionalization; and (3) the tying of regions into a common statewide communications system.

Emergency medical services normally function within a cycle that consists of the following stages: (1) incident; (2) detection; (3) notification; (4) dispatch; (5) closure; (6) action; and (7) return to station. After the emergency has been detected, communications play a vital role in the succeeding stages of the EMS cycle. The notification phase consists of the action which alerts the emergency resource control agency of the incident. This link in the cycle consists of the person, usually a layman, who makes the initial call to responsible authorities. Dispatch is the next stage in the EMS cycle and consists of the act of ordering the appropriate emergency resources to the emergency site. The closure stage consists of the process which transports emergency resources to the emergency scene. In this phase, the emergency medical resources must have the capacity to communicate with law enforcement, fire departments, and other emergency agencies. For emergency medical services, the action stage of the EMS cycle is extremely important. The communications tie between the mobile emergency care teams and the emergency department is critical in this phase of communications. Here, the direct involvement of the physician is mandatory.

### PUBLIC ACCESS TO EMERGENCY MEDICAL SERVICES

The public must be able to summon professional medical assistance in emergency situations. Any emergency medical system is compromised unless the public can gain prompt and easy access to the system.

From a Montana State Department of Health hospital emergency department survey (1972), it was determined that 27% of the reporting hospitals had no identifying signs on nearby highways; 16% of the hospitals had no signs in the vicinity of their grounds; 73% of the hospitals had location signs for the emergency department entrance on the grounds, but only 56% of these were illuminated at night.





Few roadside emergency telephones are operating in Montana. No real effort has been made to place such telephones at high-accident locations, highway rest stops, or in remote areas. Mountain Bell Telephone Company, which serves most of Montana, has a policy to place at least one outdoor pay telephone in every community it serves.

The most common method of seeking emergency aid is through the use of the telephone. There are, however, barriers to its use. Some of the more prominent difficulties are:

1. The caller must know whom to call and that party's telephone number;
2. The telephone must be available, and in rural Montana there are often great distances between telephones; and
3. Coins are needed to activate a prepay public telephone (ref. 6).

### Recommendations

Location Signs. The means by which the public can quickly identify and locate emergency medical facilities should be expanded and improved. Directional signs should be distributed in such a manner that any person unfamiliar with an area can quickly locate emergency medical facilities. Finally, hospitals should provide well-illuminated directional signs for the emergency department entrances on and near their grounds.

Public Telephones. Steps should be taken to assure that public telephones are available, conspicuous, well placed, and adequately illuminated. An evaluation of the location of public telephones should be made for each community in Montana. The position of these telephones should be based upon the availability to the public, and those telephones to be deemed ill placed should be relocated. Ideally, this evaluation can best be done by local EMS councils in cooperation with the State Department of Health and Environmental Sciences, Communications Bureau, and telephone companies.

It is recommended that information be placed on the public telephone designating the nearest source of emergency service. Location information, such as a code number or address, should be placed on each public telephone to aid the dispatcher in determining the exact location of the emergency call.

Roadside Emergency Telephones. It is recommended that roadside emergency telephones be placed at selected highway rest stops. High accident locations also can be determined by using rural accident clusters and rural accident analysis programs developed by the Planning and Research Bureau, Department of Highways. By utilizing these programs, roadside emergency telephones can be located where they will receive maximum emergency use.

911 System. Because most emergency calls are initiated by private citizens, the general public is the most important element in reducing the response time of emergency resources. If the public can be given a telephone number "that is easy to remember and easy to dial . . . (then) some of the first crucial minutes will be saved." (ref. 1)





Such a system, the Universal Emergency Telephone Number (911), does exist in three locations in Montana. It is a means by which a caller, under stress conditions, can obtain fast and direct access to emergency medical resources. The further development of the 911 concept on a local basis is strongly recommended. However, it is suggested that 911 systems be developed according to local needs by local public agencies.

The following information is intended to present suggested guidelines and criteria for the establishment of a local 911 system:

**Planning** - It is imperative that local EMS planners first make provisions for the centralization of emergency resources by establishing central dispatch. For a 911 system to function correctly, it must be tied to a central authority which coordinates all community emergency resources.

A working arrangement must be established between public agencies that will participate. These agencies must realize that they will not necessarily lose their own dispatch capabilities, and that the system will provide a better service to the public. Equally important, the public must be educated on the proper use of this system.

An often important ingredient to the establishment of a local 911 system is to make it a public political issue because:

" . . . in most areas . . . the decision to implement the system has been political. 911 has not been installed at the request of public safety organizations nor through the initiative of telephone companies, but rather because it was a politically wise decision."  
(ref. 2)

The participants in the planning of a local 911 system should include members of the local EMS Council, representatives of state agencies which are involved in emergency medical services, and telephone companies.

**Organization** - The area coverage for a 911 system, while having some limitations, does not have to be confined to geographic or jurisdictional boundaries. The decision as to how large an area a 911 system should cover is strictly a local one.

**Operation** - The operation of any 911 system is basically the same: (1) the public is able to gain immediate entry into the system by dialing an easily remembered telephone number; (2) that call is immediately answered by a dispatcher on a 24-hour basis; (3) the dispatcher evaluates the call; and (4) either dispatches directly, or routes the call to the proper emergency agency.



## COMMUNITY EMERGENCY MEDICAL COMMUNICATIONS SYSTEMS

### Dispatching

For emergency medical services, a dispatch system is needed that will quickly and efficiently dispatch and coordinate emergency medical resources. In Montana, many different public service agencies function as dispatchers. Quite often that role is duplicated by a number of agencies within a single local area. Because no single agency or person has the responsibility and authority to manage these services, the majority of these dispatchers fulfill only one of the two necessary activities--that of dispatching. The function of coordination is either dispersed to other authorities, or completely ignored.

### Ambulance Radio Systems

In order to evaluate ambulance radio communications, all services were classified according to their level of two-way radio communications.<sup>1</sup> From this classification it was found that 30 ambulance services were Class 1, 56 were Class 2, 5 services were Class 3, and 7 services were Class 4.

### Hospital-Based Communication Systems

The establishment of direct communication ties between the mobile care team and the hospital emergency department is vital to the effective delivery of emergency medical care. High band VHF frequencies, such as 115.280 and 155.340, have been assigned by the FCC as the emergency medical frequencies in Montana.

Currently, these emergency frequencies are being used or are being installed in 21 hospital-based radio systems. Many of these hospitals have reported problems with the operation of their radio systems because of untrained operators.

Intra-hospital communications vary widely from location to location. Many of the larger hospitals use radio paging equipment. However, there is a tendency to saturate an operational area with these devices and overload the emergency frequencies in that area. Phone-patches, allowing for radio-telephone links, also are used considerably.

Alarm systems within the hospital which provide for the marshalling of emergency resources are often antiquated. The hospital switchboard operator usually operates the alarm system.

At present, most physicians are dependent upon the telephone as their sole link with other emergency medical resources.

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<sup>1</sup>The following criteria was used for classification: Class 1 - ambulance to hospital (emergency frequencies); Class 2 - ambulance to law enforcement and no direct radio interface to hospital; Class 3 - ambulance to dispatcher and no direct interface to law enforcement or hospital; and Class 4 - no radio communications.





## Recommendations

Dispatching. The dispatch center is the bonding element that brings together all operating components of the EMS communications system. After receiving the emergency call, the dispatcher must be able to dispatch and coordinate all emergency medical resources.

The dispatch center should be staffed by trained personnel 24 hours a day. EMS dispatch personnel should be trained in: (1) radio procedures; and (2) first aid. Medical training for dispatching is desirable so they may be able to communicate more adequately with medical personnel.

The dispatch center facilities should contain sufficient communication equipment--both radio and land line--to adequately serve both the day-to-day emergency and the disaster requirements of the area served. Equipment requirements would also allow for interfacing of normally non-compatible systems such as radio and telephone services, via phone-patch couplers.

Sufficient emergency power should be available to guarantee 24-hour operating capability.

The dispatch center must have the ability to communicate with those officers responsible for public safety in the event of a disaster situation. Wherever practical, the dispatch center should be located in the Civil Defense's Emergency Operating Centers, and thus insure the integration of a community's medical resources during a major disaster.

With the adoption of the special emergency frequencies, ambulance mobile radio stations still retain the need to communicate with other public service agencies, i.e. law enforcement. Communications on different frequencies are possible by several means, however the optimum solution is to have each mobile unit relate directly to their own station. The dispatchers at the control stations can make all necessary cross agency ties.

Ambulance-Hospital Communications. The emergency mobile network is the backbone of the EMS system. It is essential that direct hospital to ambulance communications be established on the statewide emergency frequencies. This network:

1. Can be used as a means of dispatching ambulances.
2. Functions as the emergency ambulance-hospital communications channel. It allows the medical care team to be in continual voice contact with each other. The physician can provide remote supervision of the mobile care team, and be continually informed of a patient's condition and instruct ambulance attendants on care to administer. The emergency department also can be routinely notified of the pending arrival of emergency patients.





Hospital Communications. The principal method of inter-hospital communications will remain the telephone land line. Leased land lines--hot lines--should be utilized because it is a direct telephone connection between two or more points, and is designed for exclusive use by the subscriber. Hot lines also should be maintained between hospitals, dispatchers, and the major emergency response agencies, i.e. law enforcement.

Hospitals also should maintain the standard dial phone, which is used as a backup to radio and direct land line.

The 155.340 frequency is designed for hospital administration and daily radio operation. It will provide hospitals with:

1. Directing maintenance and security operations;
2. Communication links between hospitals on a regional basis, providing for the transfer of patients as well as needed supplies, blood, etc.;
3. Communication ties with other hospitals and Civil Defense in disaster situations.

Phone patches should be installed in hospital emergency departments that are not staffed 24-hours-a-day by physicians. This device will allow the mobile care unit to communicate with the physician by telephone.

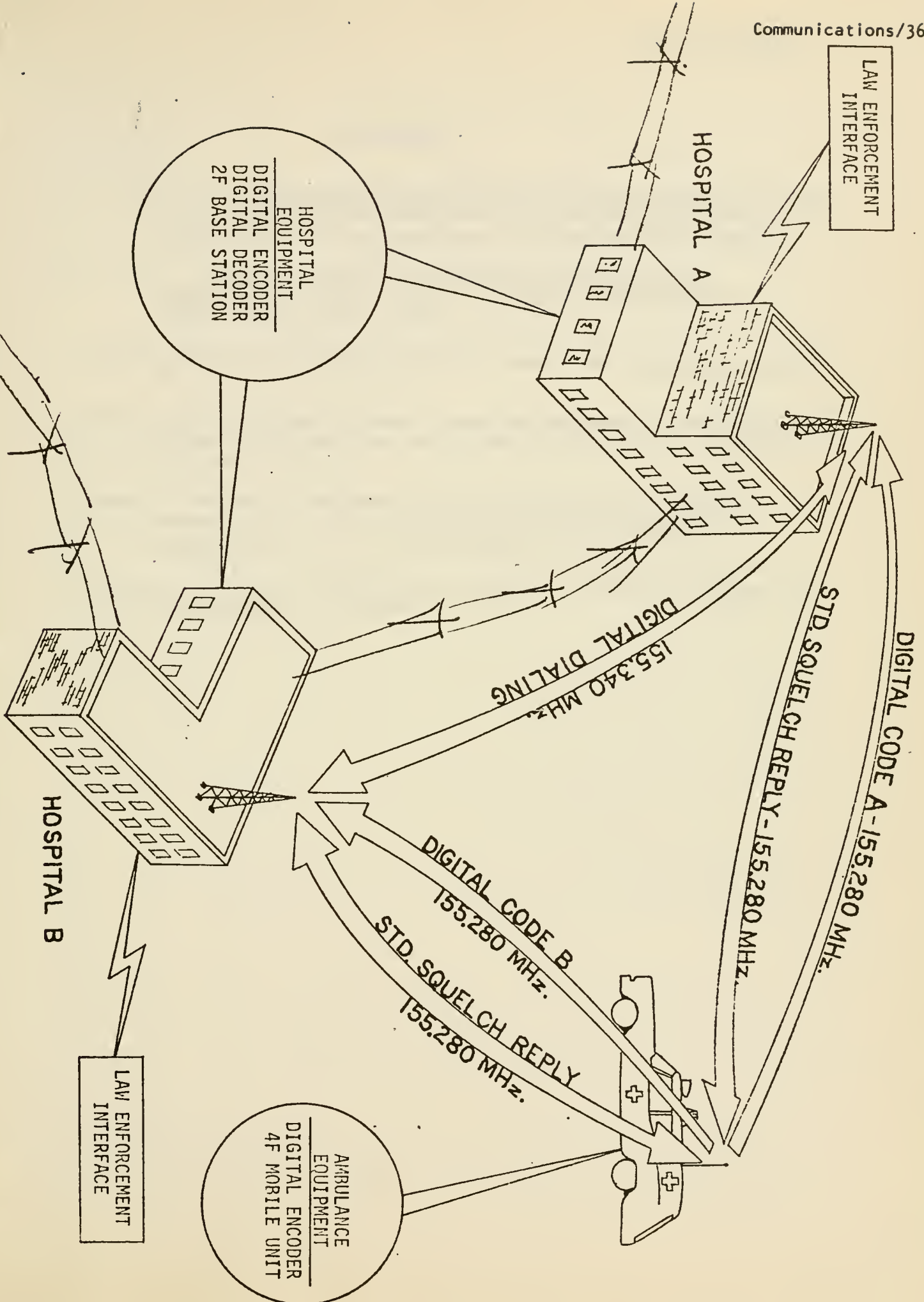
The use of small hand-carried receivers (pagers), which emit audio tones to alert personnel, is an efficient and inexpensive means to maintain contact with key personnel. It is recommended that such paging devices be utilized whenever possible to complement a local area's communication system.

An integrated communications network, which efficiently meets the requirements in all areas of hospital operation, is essential to better hospital patient care.

For certain areas of Montana, biomedical telemetry can assist in providing excellent emergency care. This system can closely combine the physician with the mobile care unit and the physician can provide diagnosis and direction to the skilled medical professional at the mobile station.

Physiological monitoring and medical data transmission by special telephone equipment is being used increasingly to supplement information gathered from personal observations. It is recommended that such a mode of communications be established between all hospitals in Montana. When consultation is indicated, medical data can be sent to a medical facility specializing in certain medical services for interpretation and analysis. The establishment of hospital to hospital data systems should be made, ideally by the regional EMS councils.







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## FACILITIES

### UTILIZATION

"New patterns of medical care, especially in the emergency department, emphasize the need for separation of the non-urgent patient from the true emergency. Alternative facilities for the care of the non-urgent patient should be developed, whether it be in hospital outpatient clinics, group practice clinics, industrial clinics, private physicians' offices, or other. The design of emergency departments and services should be such that they could be rapidly augmented for mass casualties." (ref. 6)

The demand for medical care has experienced a large increase in Montana as throughout the nation. Studies have shown the patterns and pressures of emergency services in American hospitals (ref. 3, 14, 19 & 22). Problems have been identified such as: the over-utilization of the emergency department for non-urgent medical problems; and the tendency to substitute the emergency room care for care by a private physician. Other influencing factors have been noted such as the inability of patients to find a physician in time of emergency, especially at night, on weekends, and on holidays; the economic advantage of using hospital emergency facilities because of insurance coverage; the recognition by the public of the hospital as a center of community medical care where the best facilities and staff should be available; the increasing use of these facilities by doctors themselves, a large number of whom refer patients directly to the emergency department or arrange to meet patients there, especially on weekends and at night, when their offices are closed, or when the physician recognizes that the facilities in his office are inadequate for diagnosing and treating the condition at hand. In addition, increased longevity, accompanied by increased frequency of emergency illnesses in the older age group and the increase in automotive and industrial injuries result in greater utilization of emergency rooms.

The emergency department is increasingly used by low-income groups. These groups tend to seek health care not on a preventive basis, but rather on a crisis basis. It also has been shown that low-income families tend to use the emergency department as a source of ongoing care, while high-income families use it for true emergencies (ref. 15, 18 & 19).

On a national level, non-emergency cases in emergency departments run from a low of about 15 percent of all visits to a high of approximately 90%. In 1966, the Division of Medical Sciences of the National Academy of Sciences reported that more than two-thirds of the 40 million emergency room visits in 1966 could not be classified as emergent.<sup>1</sup>

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<sup>1</sup>Emergent: threatening to life or limb without immediate medical attention; acute and usually severe. Urgent: requiring medical attention within a few hours; acute but not necessarily severe. Non-urgent: not requiring the resources of an emergency room; non-acute, minor severity.

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necessary funds to carry out its  
policy. This is due to the fact  
that the government has been  
unable to raise the necessary funds  
to carry out its policy.

White and O'Connor (ref. 20), in determining the degree of urgency from emergency room records, and physicians found that emergent cases resulted in 3.3% of the visits to the emergency department; urgent cases were 57.1%; and 35.9% were non-urgent cases. Scheduled procedures such as cast changes or minor surgery attributed to 3.3% of the visits.

The utilization of emergency departments in Montana parallels the national situation. From hospital records, it has been established that the hospital outpatient load in Montana (1972) was almost 432,000 visits. Only about 26% of these visits were listed as actual emergency cases. Thus, 74% of all hospital outpatient visits in Montana, which in almost all cases means emergency department visits, were for non-emergencies.

A suggested method of solving the overloaded emergency department would be to eliminate the major causal factors of the overloading, a significant cause being the scarcity of alternate sources of medical care. For many, especially the low-income group, the emergency department is, of necessity, the initial point of entry into the health care system.

The development of alternate care facilities for the non-urgent patient should be considered. Concurrently, educational programs for the general public on the proper function of the emergency department would have to be implemented. The use of other types of outpatient facilities should be emphasized for non-urgent patients.

These alternate sources of primary care could take the form of ambulatory care centers, primary care centers, neighborhood health clinics, and outpatient departments that stay open evenings and weekends. Efforts would be made to separate the persons wanting primary care from those who are acutely ill or severely injured.

Perhaps a more practical solution to the over crowding of emergency departments in Montana would be to accept all patients in the emergency department, regardless of the nature of their complaints, and to expand the emergency departments' outpatient capabilities to accommodate them. This approach would not only allow the hospitals to continue to serve the health care needs of the non-emergent patients, but would contribute to the actual improvement of such services. In view of the recent trends in outpatient care being provided in the emergency department, this latter proposal would probably be easier to implement by the hospitals themselves and would be more readily acceptable to the patients.

#### STAFFING

1. Employment of full-time emergency department physicians.
2. Full-time coverage by a special partnership of corporation or licensed physicians under contract with the hospital. Doctor members of the corporation serve a tour of duty in the emergency room being responsible for all of its eventualities. As in other staffing procedures, they refer those patients requiring additional treatment in the hospital to the established medical staff.





Under any emergency department staffing scheme, a roster must be maintained of consultants in all available specialities to be called as needed. All staffing schemes should provide for communication systems which will allow for rapid response by physicians to emergency calls.

No matter which staffing method is adopted, it will be unacceptable if it functions on the principle normally applicable in private practice, that the physician may decline to accept particular patients. In the document establishing the staffing system, there should be specific provision that no consultant or physician working in the emergency department would be permitted to refuse a patient unless he personally provided a competent substitute who would be immediately available. The physician may, of course, refuse to treat a particular patient whose condition is beyond his competence; in such cases, he must arrange for the prompt transfer of the patient to the appropriate physician (ref. 4).

The quality of staffing is the determinant of emergency departments' functional excellence. The "on-call" system of coverage of most of Montana's hospitals is, in many instances, outmoded and unproductive. To function in conformity of today's high medical standards and provide the community with their crucial services, emergency departments should, whenever possible, have full-time coverage by physicians who limit their practice to emergency medicine (ref. 4, 7, 12, 16, 17 & 18). The full-time practice of emergency medicine is emerging as a new medical specialty. There is a welcome trend for community hospitals to initiate efforts to establish this type of coverage ( ref. 9 & 11).

There are various acceptable methods for staffing emergency departments which (not necessarily in order of preference) include:

1. Voluntary service of staff members and assignment of them on a rotational, on-call basis as indicated in a roster. The roster is periodically prepared by the emergency department director and should be posted in the department, at the hospital switchboard, and other suitable places.
2. Compulsory service by all active or attending staff members, regardless of specialty, on a rotational on-call basis. The rationale for compulsory emergency department service is that such service is an obligation imposed by the acceptance of admitting privileges and staff membership.
3. Compulsory or voluntary assumption by staff physicians of responsibility for medical coverage in the emergency department for rotated periods. Each doctor has advance notice of his assignment and is spared from frequent and irregular calls at inconvenient times.





## RECORDS<sup>2</sup>

Emergency department records should be part of the unit record system of the hospital. Patients arriving at the emergency department via ambulance will have their records initiated by the ambulance team. A copy of this trip report will become a part of the patient's medical record. Emergency department records, as well as the other emergency department services, should be reviewed routinely by an appropriate committee of the medical staff to assure optimal medical care.

Record review and evaluation in the emergency room should be done on the same basis as in the other hospital departments. Subjecting emergency departments to the same rigorous quality control scrutinies as imposed upon other disciplines will have a positive impact on up-grading standards. Knowledge of the incidence of injury and illness types, which require the use of emergency medical facilities also, are most useful in planning for specialty staffing and equipment for the emergency department.

In addition, hospitals should keep records of complaints and correspondence from patients and provide them to the emergency department committee for review.

## POISON CONTROL CENTERS

"Every emergency department should have a poison control center or immediate access to one operating under the standards of the American Association of Poison Control Centers." (ref. 2)

A number of poison information centers have been established in hospitals throughout the country, where information may be obtained on toxicity and treatment. The telephone numbers of such centers should be posted in the emergency department along with a list of common poisons and antidotes.

Information on these poison control centers is available from the National Clearinghouse for Poison Control Centers, Accident Prevention Program, Public Health Service, U.S. Department of Health, Education, and Welfare, Washington 25, D.C.

The National Clearinghouse does not designate a unit as a Poison Treatment Center. This term is used by some State Health Departments to refer to hospital emergency departments where treatment can be given to the patient. In reality, therefore, almost every hospital with emergency department facilities can be considered a Poison Treatment Center. The Poison Information Center was established to encompass centers, such as the New York City Health Department, where only information is furnished and treatment facilities are available elsewhere. Anyone can call the New York Center for information, but they must go to one of the hospitals for treatment.

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<sup>2</sup>Two often cited references on hospital records are: (1) American Hospital Association, "Guide to the Organization of a Hospital Medical Record Department" (Chicago: the Association, 1972). (2) \_\_\_\_\_, "Medical Record Forms for Hospitals: Guide to Preparation" (Chicago: the Association, 1963).



The term, Poison Control Center, which includes most of the centers in the United States, encompasses a unit which supplies information and also has facilities immediately available to render treatment. The Directory of Poison Control Centers lists only Poison Control Centers and a few Information Centers.

#### MONTANA POISON CONTROL CENTERS

<u>City</u>	<u>Name &amp; Address</u>	<u>Telephone</u>	
State Coordinator	State Department of Health Helena 59601	449-2544	John S. Anderson, M.D. Executive Officer and Secretary
Bozeman	Poison Control Center Bozeman Deaconess Hosp. 15 W. Lamme 59715	586-5431	Loxenia M. Wald, R.N.
Helena	Poison Control Center St. Peter's Hospital 2475 Broadway 59601	442-2480 Ext. 317	Donald E. Espelin, M.D. Dennis R. Yost, R.Ph., Assistant
Great Falls	Poison Control Center Mont. Deaconess Hosp. 1101 26 South 59401	761-1200	Joyce Braaten, R.N.

#### CLASSIFICATION

The communities' emergency departments should be evaluated in terms of facilities, services, and personnel, with emphasis on the immediate availability in the emergency department of skilled physician care. Consideration should be given to the concept of classification at a community level, based on the type of medical care that can be rendered. Standards should also be established governing the transfer of patients to other emergency facilities when necessary.

The provision of comprehensive, high-quality emergency services in all Montana hospitals is an impossibility. The current attitude that an ambulance must deliver a patient to the nearest hospital is no longer acceptable. The patient must be transported to the emergency department best prepared to care for his particular needs. The goal of categorization is to determine the capabilities and readiness of a community's hospitals and staff to provide treatment for emergency patients.

Although the criteria for classification of hospital emergency departments, as outlined in the following pages, was designed specifically for Montana by Montanans, it is not intended that this classification be implemented without field testing and experimentation beforehand. Endorsement of such a system for classification could not be expected without such pre-testing and experimentation. The American Hospital Association has recently adopted this position in reference to the national categorization.<sup>3</sup>

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<sup>3</sup>See Facilities Appendix, American Hospital Association Position Statement on National Categorization.





A recent survey<sup>4</sup> indicated that almost all of the hospitals in Montana have emergency departments. It is obvious that all of these emergency facilities are not comparable in terms of capability. The Montana emergency departments range from those which should be classified as first-aid stations to the emergency departments able to provide management of major trauma and cardiac problems, and for acute medical, psychiatric and surgical conditions. In order to attain this latter capacity, advanced diagnostic and supportive equipment as well as highly-trained physicians, nurses, and technicians are necessary. Few of Montana's hospitals have reached this level.

It is unacceptable to allow ambulance attendants to utilize the nearest emergency department regardless of the facilities available. In addition, the impact on the lone physicians and small remote hospital staffs of severely injured patients must be kept in mind.

Classification of hospitals will enable a physician to redirect a patient to another hospital if reports from the ambulance indicate a need for more sophisticated facilities. It will also facilitate the transfer of a patient who develops serious complications during hospitalization. An additional benefit from classification will come from work by some hospitals and their medical staff to improve their capabilities and thereby gain a higher classification.

Numerous systems for classification of emergency departments have been proposed (ref. 1, 6, 8, 10 & 13). Following the recommendations of the Governor's Advisory Council on Emergency Medical Services, the hospitals in Montana should be classified according to Montana's resources. Utilizing the American Medical Association's pamphlet, "Categorization of Hospital Emergency Capabilities," as a general guide, the Governor's Advisory Council on EMS, in cooperation with Montana members of the American College of Surgeons, established a typology to follow in the classification of hospitals. Before final adoption, the classification criteria will be referred to the Montana Hospital Association, Montana Medical Association, and the Montana Nurses Association for their review and comment.

The hospitals will be classified by sending a self-classification form, developed by the State Department of Health and Environmental Sciences, to each hospital with a request to rate themselves as to the classification they wish to qualify for. After a hospital has applied for a classification, an evaluation team, composed of members of the Montana Trauma Committee, emergency department nurses, and State Department of Health staff, would make an on-site determination as to whether or not the hospital satisfied that classification's requirements. The following classification scheme will be used:

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<sup>4</sup>Montana State Department of Health and Environmental Sciences, Hospital Emergency Department Survey (1972). See Facilities Appendix.





CLASSIFICATION OF HOSPITAL EMERGENCY DEPARTMENTS IN MONTANA

There is now general agreement that identification and classification of hospital emergency department-facilities is necessary in order to provide the best possible care for victims of trauma and serious illness. The Governor's Advisory Council on Emergency Medical Services considers the AMA categories of hospital emergency capabilities not applicable in Montana. With a large, sparsely populated geographic area and medical centers widely separated, the problems differ significantly from those in metropolitan regions. In addition, staffing and hospital organization in Montana is different from that in large cities and in hospitals having resident professional staff and affiliation with teaching institutions.

Recognizing the availability in several Montana cities of well-trained, qualified professional personnel and sophisticated equipment, the Advisory Council believes it proper to identify and classify hospital emergency department facilities in this state. It is anticipated that classification will facilitate triage, referral and transportation for physicians, nurses, law enforcement agencies and ambulance services and thereby improve emergency medical care generally. Also, by focusing attention on regional emergency department capabilities, it is hoped that existing services will be updated and improved.

It should be emphasized that there has been no intent to downgrade the value of categorization of hospital emergency department capabilities as outlined by the American Medical Association. It is our purpose to present criteria for a practical and workable classification for the people of Montana. Furthermore, it has seemed to us proper to consider in the classification of this region's hospital emergency departments the medical facilities available in the respective communities. This philosophy is in accordance with the laudable trend toward consolidation of medical services and implies the necessity for close cooperation between professional and administrative personnel in those communities having more than one hospital.

In conclusion, it is the Advisory Council's recommendation that a Comprehensive Emergency Service emergency department in Montana must have professional personnel and physical equipment continuously available in order to provide comprehensive, resuscitative and primary surgical and medical care for any victim of trauma or serious illness. Specific criteria for the various classifications of emergency department capabilities are outlined in the following paragraphs.



## COMPREHENSIVE EMERGENCY SERVICE

### SCOPE OF CAPABILITIES

The hospital shall be fully equipped, prepared, and staffed to provide prompt, complete and advanced medical care for all emergencies including those requiring the most complex and specialized services for adults, infants and children, including newborns. The hospital shall have a capacity adequate to accommodate the direct and referred patient loads of the region served and be capable of providing consultative support to professional personnel of other hospitals and health facilities in the same region. The community will have available to it licensed land and air ambulance service.

### EMERGENCY DEPARTMENT

Overall responsibility for the operation of the emergency department shall be delegated to a medical staff physician with authority equivalent to that of other hospital committee heads.

#### Essential Staff

The emergency department staffing at all times shall include experienced physicians,<sup>5</sup> physically present or available within fifteen minutes, registered nurses, and other allied health personnel, each with a background of broad training in emergency care, including special training in emergency lifesaving procedures.

#### Essential Capabilities and Equipment

Emergency department capabilities and equipment adequate for the care of direct admissions or referrals of adults, infants and children, including newborns, from other hospitals shall be available and prepared to cope with all emergencies.

Equipment shall include: airway control and ventilation equipment, suction devices, cardiac monitor-defibrillator, pacemakers, apparatus to establish central venous pressure monitoring, intravenous fluids and administration devices, sterile surgical sets, gastric lavage equipment, and drugs and supplies.

Adequate psychiatric facilities shall be available within the community for the care of the acutely disturbed patients. Follow-up and a predetermined plan for transfer to the proper facility specializing in this type of care shall be established.

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<sup>5</sup>Experienced physicians, when applied to residents in training in that hospital, means those with more than two years of residency training; when applied to other physicians, experienced means one with more than two years experience following graduation.





HOSPITALEssential Staff

The hospital shall be staffed by experienced physicians physically available within fifteen minutes each day in all specialty categories necessary to the management of life-threatening conditions and by registered nurses and other allied health personnel. In addition, registered nurses and other allied health personnel shall be promptly available to respond to the emergency department, special care units or wards. Fully qualified specialists in all emergency specialty categories shall be on-call for consultation and physically available for service in the emergency department or other hospital areas within a short time.

Blood Bank

The hospital shall have a blood bank, as defined by the American Hospital Association, containing conventional types and have ready access to a supplemental supply. In addition, blood shall be immediately available to the emergency department.

Laboratory Services

Laboratory services within the city shall be capable of performing rapid analyses of blood gases, pH, serum electrolytes, and other procedures appropriate for emergency medical care including analysis of body fluids for drugs and alcohol. This service shall be staffed at all hours by qualified personnel who are promptly available. (Within fifteen minutes)

Radiological Services

In-hospital radiological service shall be near the emergency department and shall be capable of providing routine studies, utilizing fixed or mobile equipment as needed. This service shall be staffed at all hours by experienced physicians and qualified technicians who are available within fifteen minutes. Contrast studies, including angiography, shall be available on short notice in a radiological facility of the hospital.

Operating Room(s)

Operating room(s) shall be ready and promptly available to patients from the emergency department at all hours for emergency surgical procedures, and staffed by promptly available operating room personnel. Staffing by appropriate surgical specialists, anesthesiologist, and operating room personnel promptly available within a very few minutes is essential.

Postoperative Recovery Unit(s)

A postoperative recovery unit or equivalent<sup>6</sup> shall be available to the operating room suite and staffed by trained personnel. All essential personnel shall be in-house and available within fifteen minutes at all hours for postoperative emergency patients.

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<sup>6</sup>Equivalent being intensive care unit when postoperative recovery is not staffed.





### Intensive Care Units

Intensive care units within the city, cardiac and other, for adults, children and infants, including newborns, with provisions for routine monitoring of the electrocardiogram and other physiological parameters is essential. The units shall be staffed at all hours by specially trained personnel experienced in the critical care management of cardiac and respiratory crises, multiple injuries, renal failure, extensive body burns, and other medical and surgical emergencies.

### Communications Equipment

Communications equipment for in-hospital coordination and for direct two-way communication between the emergency department and ambulances, dispatchers, law-enforcement personnel, and other hospitals is required. This should be integrated with the state-wide Emergency Medical Service Communications Plan.

### Helicopter Landing Facilities

Helicopter landing facilities shall be in close proximity to the emergency department.



## MAJOR EMERGENCY SERVICE

### SCOPE OF CAPABILITIES

The hospital shall be fully equipped, prepared, and staffed to provide prompt, complete and advanced medical care in all but one of the emergency medical specialties including those requiring the most complex and specialized services for adults, infants and children, including newborns. It shall have a capacity adequate to accommodate the direct and referred patient loads of the region served and be capable of providing consultative support to professional personnel of other hospitals and health facilities in the same region. The community will have available to it licensed land and air ambulances.

### EMERGENCY DEPARTMENT

Overall responsibility for the operation of the emergency department shall be delegated to a medical staff physician with authority equivalent to that of other hospital department heads.

#### Essential Staff

The emergency department staffing at all times shall include experienced physicians,<sup>7</sup> physically present or available within fifteen minutes, registered nurses, and other allied health personnel, each with a background of broad training in emergency care, including special training in emergency lifesaving procedures.

#### Essential Capabilities and Equipment

Emergency department capabilities and equipment adequate for the care of direct admissions or referrals of adults, infants and children, including newborns, from other hospitals shall be available and prepared to cope with all emergencies.

Equipment shall include: airway control and ventilation equipment, suction devices, cardiac monitor-defibrillator, pacemakers, apparatus to establish central venous pressure monitoring, intravenous fluids and administration devices, sterile surgical sets, gastric lavage equipment, and drugs and supplies.

Adequate psychiatric facilities shall be available within the community for the care of the acutely disturbed patient. Follow-up and a predetermined plan for transfer to the proper facility specializing in this type of care shall be established.

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<sup>7</sup>Experienced physicians, when applied to residents in training in that hospital, means those with more than two years of residency training; when applied to other physicians, experienced means one with more than two years experience following graduation.



HOSPITALEssential Staff

The hospital shall be staffed by experienced physicians physically available within fifteen minutes each day in all but one of the major emergency medical specialty categories necessary to the management of life-threatening conditions and by registered nurses and other allied health personnel. In addition, registered nurses and other allied health personnel shall be promptly available to respond to the emergency department, special care units or wards. Fully-qualified specialists in all but one of the emergency medical specialty categories shall be on-call for consultation and physically available for service in the emergency department or other hospital areas within a short time.

Blood Bank

The hospital shall have a blood bank, as defined by the American Hospital Association, containing conventional types and have ready access to a supplemental supply. In addition, blood shall be immediately available to the emergency department.

Laboratory Services

Laboratory services within the city shall be capable of performing rapid analyses of blood gases, pH, serum electrolytes, and other procedures appropriate for emergency medical care including analysis of body fluids for drugs and alcohol. This service shall be staffed at all hours by qualified personnel who are promptly available. (Within fifteen minutes)

Radiological Services

In-hospital radiological service shall be near the emergency department and shall be capable of providing routine studies, utilizing fixed or mobile equipment as needed. This service shall be staffed at all hours by experienced physicians and qualified technicians who are available within fifteen minutes. Contrast studies, including angiography, shall be available on short notice in a radiological facility of the hospital.

Operating Room(s)

Operating room(s) shall be ready and promptly available to patients from the emergency department at all hours for emergency surgical procedures, and staffed by promptly available operating room personnel. Staffing by appropriate surgical specialists, anesthesiologist, and operating room personnel promptly available within a very few minutes is essential.

Postoperative Recovery Unit(s)

A postoperative recovery unit or equivalent<sup>8</sup> shall be available to the operating room suite and staffed by trained personnel. All essential personnel shall be in-house and available within fifteen minutes at all hours for postoperative emergency patients.

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<sup>8</sup>Equivalent being intensive care unit when postoperative recovery is not staffed.





### Intensive Care Units

Intensive care units within the city, cardiac and other, for adults, children and infants, including newborns, with provisions for routine monitoring of the electrocardiogram and other physiological parameters is essential. The units shall be staffed at all hours by specially trained personnel experienced in the critical care management of cardiac and respiratory crises, multiple injuries, renal failure, extensive body burns, and other medical and surgical emergencies.

### Communications Equipment

Communications equipment for in-hospital coordination and for direct two-way communication between the emergency department and ambulances, dispatchers, law-enforcement personnel, and other hospitals is required. This should be integrated with the state-wide Emergency Medical Service Communications Plan.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The document also outlines the responsibilities of the accounting department in ensuring that all transactions are properly recorded and reported.

The second part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud. The document also outlines the responsibilities of the accounting department in ensuring that all transactions are properly recorded and reported.

## GENERAL EMERGENCY SERVICE

### SCOPE OF CAPABILITIES

The hospital shall be equipped, prepared, and staffed in the emergency medical and surgical specialties<sup>9</sup> necessary to render resuscitative and life-support care of persons critically ill or injured of all ages. The availability of supplementary specialty services shall be prearranged with non-staff specialists. Transfer of patients for specialty care shall be by prior agreement with other hospitals. The community will have available to it licensed land and air ambulance service.

### EMERGENCY DEPARTMENT

Overall responsibility for the operation of the emergency department shall be delegated to a medical staff physician with authority equivalent to that of other hospital department heads.

#### Essential Staff

The emergency department staffing at all times shall include experienced physicians<sup>10</sup> physically available within fifteen minutes, registered nurses, and other allied health personnel, each with a background of broad training in emergency care, including special training in emergency lifesaving procedures.

#### Essential Capabilities and Equipment

Emergency department capabilities and equipment adequate for the care of direct admissions or referrals of adults, infants and children, including newborns, from other hospitals shall be available and prepared to cope with all emergencies.

Equipment shall include: airway control and ventilation equipment, suction devices, cardiac monitor-defibrillator, pacemakers, apparatus to establish central venous pressure monitoring, intravenous fluids and administration devices, sterile surgical sets, gastric lavage equipment, and drugs and supplies.

Adequate psychiatric facilities shall be available within the community for the care of the acutely disturbed patients. Follow-up and a pre-determined plan for transfer to the proper facility specializing in this type of care shall be established.

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<sup>9</sup>A Class C hospital would be lacking in more than one of the major emergency medical and surgical specialties.

<sup>10</sup>Experienced physicians, when applied to residents in training in that hospital, means those with more than two years of residency training; when applied to other physicians, experienced means one with more than two years experience following graduation.



HOSPITALEssential Staff

The hospital shall be staffed by experienced physicians physically available within fifteen minutes each day in all but one or more of the major emergency medical specialty categories necessary to the management of life-threatening conditions and by registered nurses and other allied health personnel. In addition, registered nurses and other allied health personnel shall be promptly available to respond to the emergency department, special care units or wards. Fully-qualified specialists in other specialty categories shall be on-call for consultation and physically available for service in the emergency department or for other hospital areas within a short time.

Blood Bank

The hospital shall have a blood bank, as defined by the American Hospital Association, containing conventional types and have ready access to a supplemental supply. In addition, blood shall be immediately available to the emergency department.

Laboratory Services

Laboratory services within the city shall be capable of performing rapid analyses of blood gases, pH, serum electrolytes, and other procedures appropriate for emergency medical care including analysis of body fluids for drugs and alcohol. This service shall be staffed at all hours by qualified personnel who are promptly available. (Within fifteen minutes)

Radiological Services

In-hospital radiological service shall be near the emergency department and shall be capable of providing routine studies, utilizing fixed or mobile equipment as needed. This service shall be staffed at all hours by experienced physicians and qualified technicians who are available within fifteen minutes. Contrast studies, including angiography, shall be available on short notice in a radiological facility of the hospital.

Operating Room(s)

The operating room(s) staffed by operating room personnel, including an anesthesiologist and/or a certified registered nurse anesthetist, shall be immediately available from in-house or on-call from outside the hospital at all hours for emergency surgical procedures.

Postoperative Recovery Unit(s)

A postoperative recovery unit or equivalent<sup>11</sup> shall be available to the operating room suite and staffed by trained personnel. All essential personnel shall be in-house and available within fifteen minutes at all hours for postoperative emergency patients.

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<sup>11</sup>Equivalent being intensive care unit when postoperative recovery is not staffed.





### Intensive Care Units

Intensive care units within the city, cardiac and other, for adults, children and infants, including newborns, with provisions for routine monitoring of the electrocardiogram and other physiological parameters is essential. The units shall be staffed at all hours by specially trained personnel experienced in the critical care management of cardiac and respiratory crises, multiple injuries, renal failure, extensive body burns, and other medical and surgical emergencies.

### Communications Equipment

Communications equipment for in-hospital coordination and for direct two-way communication between the emergency department and ambulance, dispatchers, law-enforcement personnel, and other hospitals is required. This should be integrated with the state-wide Emergency Medical Service Communications Plan.



## BASIC EMERGENCY SERVICE

### SCOPE OF CAPABILITIES

The hospital shall be equipped, prepared, and adequately staffed to render emergency resuscitative and life-support medical services for patients of all ages. Transfer when necessary shall be under prior agreement with other hospitals.

### EMERGENCY DEPARTMENT

#### Essential Staff

A designated physician shall be on-call from in-house or outside the hospital 24 hours a day. The department shall be staffed by a registered nurse or a licensed practical nurse (under the immediate supervision of a registered nurse), who shall be on-call in-house 24 hours a day, and other allied health personnel. All must be trained in emergency lifesaving procedures.

#### Essential Capabilities and Equipment

The emergency department shall be equipped with surgical equipment, airway control and ventilation equipment, suction devices, gastric lavage equipment, intravenous fluids, and drugs and supplies. Electrocardiograph-defibrillator shall be readily available for use in the emergency department.

### HOSPITAL

#### Essential Staff

A designated physician shall be on-call from in-house or outside the hospital 24 hours a day. Additional members of the medical staff shall be available at all times as needed. All must be trained in emergency lifesaving procedures.

#### Blood Bank

Blood shall be readily available from an established blood bank or from local donors on roster.

#### Laboratory Services

The laboratory service shall be capable of performing electrolyte determinations and staffed by a technician in-hospital or on-call 24 hours a day from outside the hospital. The technician must be available within fifteen minutes.

#### Radiological Services

The radiological service shall be staffed by a technician in-house or on-call 24 hours a day from outside the hospital.



Operating Room(s)

An operating room shall be continuously ready for surgery utilizing operating room and anesthesia personnel on-call 24 hours a day from outside the hospital.

Communications Equipment

Communications equipment shall be available and operating for in-hospital coordination. In addition, direct two-way radio service available between hospital, ambulances, and other appropriate emergency service personnel is required. This should be integrated with the state-wide Emergency Medical Service Communications Plan.





FIRST-AID STATION

Class E shall be all other Montana State Department of Health certified hospitals and they shall function only as triage and immediate resuscitative care centers. It is recommended that these hospitals provide the highest quality of emergency medical care within their own capabilities.



## PSYCHIATRIC FACILITIES

"Hospitals should expect that psychiatric patients will be brought to the emergency unit just as are any other medical patients. Most emergency services are prepared for the victim of the automobile crash, the accidental poisoning, or the heart attack. In similar fashion, emergency services must be prepared for psychiatric emergencies." (ref.4)

Emergency departments have become a medical catch-all that deals with everything from chronic illnesses to psychosocial problems; and in many instances, they are not prepared to handle all these situations.

The general pattern of patient contact in the emergency department--rapid analysis and quick turnover--results in a lack of follow-through and treatment recommendations. Because of the importance of the initial contact a person in psychiatric crisis has with caretakers, it is necessary that those in the emergency room have some psychiatric training.

### Staffing

A physician in the emergency department, no matter what his specialty, should be prepared to recognize emotional and psychiatric problems and be able to handle them until a more definitive diagnosis can be established. This is also true for the emergency room nurse.

Emergency department nurses should receive psychiatric orientation from the psychiatric nursing supervisor and/or hospital psychiatrists when available. This training should cover the broad concepts of mental illness as well as the specifics concerned with the management of the acute mentally ill patient. The benefits to be derived from this training will aid in the proper management of all emergency patients, not just those who are mentally ill. This would be a practical, economical and easily instituted method of improving psychiatric emergency care.

Many psychiatrists cultivate an office practice devoted to psychotherapy and have little interest in hospital-based treatment of any sort, much less in emergency care (ref. 21). Psychiatrists should be encouraged to become more active members of the medical staff of the hospital. The psychiatrist should be available for call, consultation, and for active service in the emergency unit.

### Hospital Psychiatric Facilities

The emergency care of patients with acute mental illness requires few additional facilities beyond those already existing in the emergency department. The most important requirement is knowledge of how to handle the patients. The requirement second in importance is knowledge of community agencies that can help the mentally ill. First-hand knowledge of the administrative policies and clinical organization of each agency is necessary. Also, the legal restrictions imposed by laws and legal practices must be known to the emergency staff (ref. 4).



Most of the equipment needed for the treatment of accidental poisoning is applicable for the treatment of the patient who intentionally ingests drugs or toxic substances. Also, the drugs needed for emergency use in psychiatric cases are usually provided in the hospital's pharmaceutical stores.

Although most psychiatric patients can be managed without a security room, the provision of one should be considered, especially in communities that have no other psychiatric facility. A security room in the hospital would provide the emergency care required for the severely agitated patient, and would remove, hopefully, the mentally ill from the jails. It must be stressed that mentally ill persons are sick people, and therefore need the care of a medical facility.

### Community Psychiatric Facilities

With the development of more services in the treatment of alcohol and drug abuse, increased staff positions will make possible more emergency help available through Mental Health Centers and Crisis Centers, particularly in the area of better selection and training of Crisis Center volunteers.

Some effort should be made to correlate the answering service of the Mental Health Center with the Crisis Center in each catchment area. The difficulties to overcome in this incorporation are: (1) the confidentiality of records; (2) the legal liability of Mental Health Center physicians for untrained people responding to emergency drug calls; and (3) the use of the Crisis Center for services other than Mental Health Center crises.

In the rural areas of Montana, there is a poignant need for professional help in the more isolated counties; some effort is being made in this aspect of care. For example, Eastern Montana Mental Health Region V has been successful in employing professional staff who live as well as work in the counties of Phillips, Sheridan, Rosebud, and Fallon. The individual home phone numbers and the phone numbers of at least one other person within each community, who serves as a resource and referral person, are publicized. All physicians, law enforcement officers, public health nurses, and ministers in the 16-county area have the phone numbers of not only the clinics, but the home phone numbers of all the clinic staff.

A staff committee within each hospital should be appointed to survey the hospital's existing procedures relating to psychiatric emergencies, and to determine the other community resources that could be utilized in handling mental health emergencies. A psychiatrist should be included on the committee; if there is none on the staff, one who is geographically available might be invited to assist in the project.





Simply stated, the following steps are recommended: (ref.4)

1. Assessment of existing procedures in the hospital and in the community for dealing with psychiatric emergencies.
2. Assessment of additional resources in the hospital and in the community that are not now involved but that could contribute to the effective handling of psychiatric emergencies.
3. Development of a written hospital policy that can be circulated among, and generally understood by, both hospital staff members and persons associated with related community agencies and groups.
4. Recurrent review of the policy for the purpose of incorporating further changes as they are seen to be desirable, based on practical experience and the development of additional resources.



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DISASTER PLANNING

"Since the emergency department is logically the focal point of a community's coordinated emergency medical service, this unit must be prepared to expand responsibilities, personnel, and facilities when community disasters appear. However, expansion fails to develop logically when coordination, communication, and counseling programs with both internal and external emergency services are not already a matter of policy on a daily basis." (ref. 4)

Disasters, within the context of this plan, deal primarily with natural and man-related acts. The man-related disaster, such as a train or automobile crash, is accented because such incidents occur most frequently. However, disasters can take many forms and each community must review all possible hazards within their area of responsibility.

Montana's rural communities are considered a low disaster risk because of sparse population density. However, the determination of a disaster by projecting the possible number of casualties is difficult to make in a rural setting because of corresponding limited emergency care resources. An accident involving even 5 or 10 lives in a rural community is a real disaster and will place considerable strain upon the limited emergency medical resources available.

All too often, in a disaster the hospital is not immediately notified of the disaster or of the number of patients to expect. Their first knowledge of the disaster is the sudden arrival of large numbers of casualties.

The Joint Commission on Accreditation of Hospitals requires every hospital to prepare a disaster plan that will fit into the community's disaster plan (ref. 1&2). In Montana, 84% of the hospitals have a disaster plan involving their emergency departments, and 73% have a plan which covers the management of mass casualties. While the majority of the hospitals' disaster plans involve ambulance services and other community resources, only 38% have a disaster plan that involves other hospitals. The testing of a disaster plan varies according to the size of the hospital--from 1.1% for the small 9-23 bed hospital, to 89% for the larger 142-270 bed hospital.

Many industrial operations in Montana are of a rural nature; wood products and mining industries are two such examples. Both include hazardous work and are often located at a distance from community emergency medical services. Because of these conditions, any large industry should provide for an internal disaster plan.

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<sup>1</sup>See Facilities Appendix, Hospital Emergency Department Survey (Disaster Planning).



In Montana, no general pattern exists for industrial disaster planning. More often than not, disaster planning is a subject that is completely ignored by management and labor alike. A noticeable exception is the situation at the Berkeley Pit in Butte. Here the Anaconda Copper Mining Company has a disaster plan in effect which emphasizes first-aid training, well-equipped emergency vehicles and periodic disaster exercises. The emphasis of this local plan is placed on reacting to mining disasters, but consideration is also given to community disasters.

Since 1961, the Division of Health Mobilization, Public Health Service has conducted a national emergency medical stockpile program. This program consists of Packaged Disaster Hospitals (200 bed emergency hospitals), and Hospital Reserve Disaster Inventory units (30 day supply of critical medical items).<sup>2</sup>

## RECOMMENDATIONS

### Hospitals

The objective of any hospital disaster plan should be to provide for the expansion of medical facilities so that adequate and definitive care can be given to as many patients as possible. The emergency department should be able to respond immediately in the disaster situation. For hospital and auxiliary services to respond quickly and efficiently to a disaster, the day-to-day operation of emergency medical services must be upgraded. These services are the backbone of any disaster plan, and for them to expand and operate in a disaster they must be well-trained, well-equipped and function on a daily basis. All emergency medical services must provide for coordination and communication to meet a disaster situation and this can only be guaranteed if they operate on a day-to-day basis.

In the development or review of hospital disaster plans, it should be kept in mind that the plan must be both simple and flexible. The hospital disaster plan should be able to handle both external and internal disasters. This means the plan should be flexible enough to provide for both expansion and evacuation. The ingredients of a good plan include:

1. A physician, designated by title, be chosen as control officer;
2. A fan-out system for calling personnel - including medical, nursing, and administrative.
3. Arrangements for adequate inter- and intra-hospital communications;
4. An information center to handle messages and press releases;
5. Specified and well-identified areas for reception, triage, and treatment.

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<sup>2</sup>See Disaster Appendix, List of PDH/HRDI



6. Arrangements for beds by internal and external evacuation;
7. An efficient records system;
8. Arrangements for auxiliary power and alternate water supply;
9. Coordination with all other emergency resources, such as civil defense, ambulance services, and police departments.
10. Arrangements be made with other hospitals in the community and area to delineate patient care responsibility. In the preparation of the plan, consideration should be given to the pooling of resources with other hospitals. Arrangements should be made so that any hospital can call for immediate assistance from neighboring hospitals. To guarantee the implementation of any such arrangement, adequate two-way radio communications must be established on a regional basis.
11. Arrangements should be made to expand health manpower by using veterinarians, pharmacists and dentists within the hospital to help manage mass casualties.
12. Definite agreements with law enforcement for keeping traffic controlled to allow for admission of patients and for security at the hospital.

The development or evaluation of a hospital disaster plan will vary according to the hospital size and its service area. Numerous authorities (Thorpe--1965, Savage--1971) have suggested that a disaster committee can greatly help in the development and implementation of a disaster plan. This committee, consisting of the providers of hospital emergency care, would: (1) develop the plan; (2) aid the local EMS council in coordinating hospital and community plans; (3) coordinate departmental plans with the hospital disaster plan; (4) assign duties; (5) conduct and supervise training programs; and (6) review and revise the disaster plan.

The disaster committee should be familiar with civil defense and disaster laws that may affect operations during a disaster. It is recommended that the disaster committee seek the advice of the hospital's legal counsel on the legal ramifications of disaster.

It is emphasized that the hospital disaster plan should be integrated and made compatible with the community or county disaster plan. Coordination is imperative because neither plan can stand on its own--each must complement the other. The local EMS Council should be given the responsibility of integrating the hospital and community disaster plans.

Hospital disaster exercises should be conducted annually and be incorporated with community disaster drills, so as to help test the effectiveness of the plan. The disaster rehearsal should be simulated in a realistic manner. The scene at the disaster site should include smoke, noise, debris, and realistic casualties. Whenever possible, the exercise should be conducted under adverse conditions such as darkness, rain, or cold. During the disaster test, arrangements should be made to harass the hospital with large numbers of telephone calls, simulated distraught relatives, and temporary power failures.





The communications system should be checked thoroughly and often, for a functioning communications network is mandatory in a real disaster situation. The communications system should be tested by providing for telephone alerts for medical staff, temporary jamming of hospital switchboards, and a daily check of the hospital's two-way radio system.

### Communications

Two conditions are mandatory in communications to guarantee the proper management of a disaster situation: (1) the system must operate on a day-to-day basis; and (2) there must be a built-in redundancy. Personnel responsible for the operation of communications equipment cannot be expected to function properly unless they use that equipment routinely. Redundancy of the communication system is necessary to provide for a back-up in case a portion of the system is inoperative.

Communications equipment should be selected to fit local day-to-day needs, but with the ability to operate in a disaster. A central authority should be designated to control the communications system with direct ties to the emergency department. Radio communications should be available between the emergency department, the ambulance service, the dispatch center, and authorities at the disaster scene.

### Organization at the Disaster Scene

Organized planning must, by necessity, first deal with the disaster site and the first responsible authorities on the scene. These authorities will usually include police, fire, and ambulance services. Such services must agree on communications, lines of authority, vehicle routes, and ambulance loading points. Provisions for such an agreement should be made in the community disaster plan.

In a disaster situation, the general public is most often the first on the scene. The victim(s) must depend upon lay persons to provide necessary first aid before responsible authorities arrive. Communities should make provisions to assure that a large portion of their population is trained in first aid, either American National Red Cross or Medical Self-Help.

Triage, or the management of casualties, is extremely important at the disaster site. The accessing and sorting of patients should be managed by a professional medical team. Usually the ambulance service is the first component of the medical team to arrive at the disaster site and ambulance personnel should have special training, at least at an EMT level.

The evacuation and proper distribution of patients is the next component in the sequence of providing care to disaster patients. The casualty load must be distributed evenly among all participating facilities. All too often in past disasters, patients have not been routed properly, thus creating a situation where some hospitals are overwhelmed while others receive no patients. The proper spreading of the casualty load depends upon control. This management should be provided by a control center located at the disaster site with adequate communication ties with hospital facilities.



Whenever possible, an experienced physician should be at the disaster site and function as medical officer in charge. The physician should supervise the emergency services, triage, and the distribution of patients to hospitals. The physician should not attempt to treat at the site except in life-threatening situations.

If, under special circumstances, a medical team of physicians and nurses is sent to the disaster site, it should have adequate organization, training, and equipment. The medical care team needs proper clothing, and should be clearly identified by marked clothing and identification cards. Equipment for the medical team should be readily available and easily transportable.

### Industry

The objective of an industrial disaster plan should be to react promptly and effectively both to industrial and community disasters. Such a plan should be both simple and flexible to fit varying circumstances.

Any industrial disaster plan should include the following points:

1. A control officer should be chosen who will be responsible for the development of the plan, coordination of industry and community plans, assigning duties, and reviewing and revising the disaster plan. Assistants from each shift should be assigned to work under the control officer.
2. An internal and external call system should be developed so that key personnel can be swiftly called to the disaster site.
3. Attention should also be given to inter-plant communications. A communication system should be established between the industrial site and community emergency resources which will insure adequate response to a disaster.
4. Secure, casualty holding areas should be designated and well identified.
5. It is imperative that coordination with local emergency resources be established and this will necessarily involve the industry in community disaster planning. Lines of authority should be established which will insure the minimization of confusion at the disaster site--before and after emergency medical authorities have arrived at the scene.
6. Vehicle routes and ambulance loading points should also be considered.



### Airports

Aircraft are being used increasingly as a means of public transport and air crises usually occur during the approach to the runway (ref. 3). It is imperative that all public airports in Montana prepare for the handling of a large number of casualties. Airports should make cooperative disaster plans with local communities. All airports serving commercial airlines should have emergency medical supplies readily available for at least 100 casualties.





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INDIAN RESERVATIONS AND EMS

Seven Indian reservations are located in Montana. Emergency medical services for Indians is primarily the responsibility of the Indian Health Service. However, the EMS capabilities within the reservations are also of concern to the State Department of Health and Environmental Sciences. One reason for concern is the exceedingly high number of accident victims of Indian lineage. Table 2 shows the relationship between the accident rate among Indians in Montana and the accident rate among all races throughout the U.S. and for Montana.

TABLE 2<sup>1</sup>

ACCIDENT DEATH RATE  
CY 1970  
RATE PER 100,000 POPULATION

U..S., All Races	Number of Accidental Deaths	Rate
Total Accidents	115,000	56.4
Motor Vehicle	54,700	26.2
All Other	60,300	28.0
Montana, All Races		
Total Accidents	718	82.2
Motor Vehicle	295	41.8
All Other	423	40.5
Montana, Indians		
Total Accidents	60	221.1
Motor Vehicle	34	125.3
All Other	26	95.8

<sup>1</sup>Source: unpublished reports from the Indian Health Service, Billings area.



By working in cooperation with the Indian Health Service, the State Department of Health and Environmental Sciences and other involved agencies can affect improvements which can reduce death and disabilities due to injury or acute illness among Indians.

The other major reason for focusing attention upon the EMS systems within the reservation is their strategic locations about the state. More than 10% of Montana's rural primary and interstate highways pass through reservations. The reservations in Montana are located in sparsely populated regions and serve as the only sources of health care within those areas. Non-Indians, as well as Indians, must rely upon IHS facilities for care during medical emergencies occurring on the reservations. To meet its responsibility to these persons, the State Department of Health and Environmental Sciences will actively devote its resources in cooperative efforts with the Indian Health Service to improve EMS care on the reservations.

IHS goals in emergency medical services are to insure by January, 1973, that each IHS facility with identified emergency services meet the regulations as set forth in the Montana State Ambulance Licensing Law. Also, in locations where ambulance services are provided on a fee or contract basis in behalf of the Indian Health Service, to assist those services to meet the requirements for state licensure. At the time of this report, identified services at Rocky Boy and Lake Deer remain deficient. Only until funds for new ambulances and emergency medical equipment are available will these services be adequate. As will be seen later, efforts have been made to assist the Northern Cheyenne Tribe in submitting a proposal for a modern ambulance service on the Northern Cheyenne Reservation. Services at Browning, Fort Belknap, Crow, and Wind River now meet the minimum standards. The Browning volunteer ambulance service is now certified by the State of Montana and all personnel have received at least advanced first aid training.

Emergency medical services' systems vary considerably in the Billings area. Of the nine service units and health centers in the area, four primarily provide the only emergency medical service available on and adjacent to the reservation community (Crow, Northern Cheyenne, Rocky Boy and Fort Belknap). On the Blackfeet, Flathead, and Fort Peck reservations and Intermountain School, the Indian Health Service has either a fee for service or flat fee agreement with locally owned and operated ambulance services. Each Indian Health Service facility operates and maintains vehicles for emergency purposes. However, many of these vehicles are improperly equipped, inadequate and incapable of maintaining life support during transit. As of August 1, 1972, no Indian Health Service ambulance service would meet the minimum Montana ambulance requirements. Also, services provided by the local non-Indian ambulance services require some assistance before they can be termed adequate.





BILLINGS AREA INDIAN HEALTH SERVICE FACILITIES WITHIN MONTANA

<u>Type of Facility</u>	<u>Location</u>	<u>Distance to Closest Hospital or Medical Center</u>
Hospital	Browning	To Cut Bank - 35 miles; Kalispell - 103 miles; Great Falls - 126 miles
	Crow Agency Harlem	To Hardin - 13 miles; Billings - 63 miles; Havre - 43 miles.
Health Center	Poplar	Health Center at Poplar
	Rocky Boy	To Havre - 31 miles
	Lame Deer	To Crow Agency - 43 miles; Billings - 106 miles
Health Station	Wolf Point	To Billings - 294 miles
	Heart Butte	To Great Falls - 123 miles
	Pryor	To Billings - 38 miles
	Hays	To Havre - 96 miles; Lewistown - 101 miles

In Indian Health Service hospitals, medical personnel, nursing and ancillary personnel are available on a 24-hour basis. In the Indian Health Service Centers, medical care is available on a 24-hour basis; however, nursing and ancillary personnel are limited between the hours of 5:00 p.m. to 8:00 a.m. The Health Stations' staff are available only on days when clinic is held. Permanent IHS staff are not stationed at a Health Station.

The three IHS Hospitals have bona fide emergency rooms. During evening hours and weekends, all patients are seen in the emergency room regardless of condition.

In some of the health centers, the treatment room doubles as the emergency room and in other facilities, the examining room is the emergency room.

All IHS facilities are required to have an internal and external disaster plan. These plans are tested periodically to insure total staff knowledge and procedure. The external plan is coordinated with State and local agencies within the vicinity.

SERVICES AND PERSONNEL

1. Transportation for emergency medical care is limited primarily to that of ambulance or personal transportation. At the Fort Belknap and Fort Peck reservations, landing strips for small, privately owned planes are available.

2. The transportation of individual patients to a physician is a major problem on many of the reservations. The lack of telephones in rural areas and a lack of adequate personal transportation may delay medical care in an emergency situation.



3. At the three PHS Indian Hospitals, all Indian patients are provided emergency care, and if specialty services are required, are transferred to either Billings, Great Falls, or Havre by ambulance.

4. First aid is provided to all non-Indian emergency cases. The non-Indian emergency patient is transferred to a private hospital as soon as his condition warrants moving.

5. Those reservations not having hospitals must transfer all emergency cases, after providing basic first aid, by ambulance to the nearest hospital.

### Personnel

1. Physician, nursing, and ancillary staff are available for emergencies at the three PHS Indian hospitals.

2. Health Centers and Stations do not have adequate backup staff on a 24-hour basis; consequently, emergency treatment provided after hours and on weekends is limited.

3. At Poplar, Wolf Point, and Riverton, IHS physicians provide emergency care in private hospitals after hours and on weekends; consequently, ancillary health staff are readily available.

4. Medical specialists are limited within the Billings Area Indian Health Service. All general medical and surgical services requiring intervention by specialists are referred to contract physicians.

### PLANNED ACTIVITIES

#### Flathead Reservation

St. Ignatius City Ambulance Service's staff have received EMT-A training. The State Highway Safety Bureau has agreed to fund the two-way radio communication system and establish a hospital-based radio station at the St. Ignatius Community Hospital. The Polson Ambulance Service more than meets the minimum state requirements. The Ronan service needs assistance before it can meet the minimum standards.

#### Fort Peck Reservation

The full EMT course will be offered at Trinity Hospital in Wolf Point. Arrangements have been made for at least five individuals from Poplar to participate in the training. These individuals are to include one PHS driver, three or more Poplar volunteer ambulance drivers, and at least one tribal policeman. In addition, efforts are now underway to certify all tribal policemen in standard first aid. All volunteer ambulance drivers have been certified in advanced first aid. In addition to the standard first aid training, all tribal policemen were given an abbreviated two-day first aid course in October, 1972. The service unit is now undertaking a utilization study to determine what would constitute legitimate use of the Poplar Ambulance Service. The results of this study will lead to policy adoption similar to an arrangement IHS has with the Browning City Ambulance Service. The purpose of this study is



to lay the ground work for funding the Poplar Ambulance Service on a flat rate basis to insure efficient operation and proper maintenance.

#### Blackfeet Reservation

Efforts are now being taken to supply the Browning City Ambulance Service with at least the minimum equipment it presently lacks. In the area of training, four levels of training were identified and have been tentatively scheduled:

1. Standard first-aid training for all tribal policemen.
2. Advanced first-aid training for all assigned city ambulance drivers and attendants.
3. EMT refresher course in Conrad (20 hours) for those individuals who completed the full course over one year ago. Two PHS drivers will be included.
4. A one day first aid course for ambulance drivers and tribal policemen that would cover emergency medical procedures not dealt with in the standard and advanced first aid courses.

#### Northern Cheyenne Reservation

PHS ambulance equipment needs were identified. Discussions with the Highway Safety Program Director have been taking place regarding the possibility of State funds to purchase an ambulance for the Northern Cheyenne Reservation. Training needs are critical. None of the tribal policemen have had advanced first-aid training. Two PHS ambulance drivers and a Northern Cheyenne tribal policeman have taken the full EMT course in Miles City. Two Green Beret medics were assigned on the Northern Cheyenne Reservation in August, 1972. One suggested activity was that these medics consider developing and implementing an abbreviated EMT course for all Northern Cheyenne tribal policemen and at least several community members from each reservation district.

#### Rocky Boy Reservation

At present, no activities at Rocky Boy have been planned. The apparent need, however, is to supply the health center with an adequate ambulance. The staff operating the existing ambulance are trained, and the community is apparently satisfied with its present service.

#### Fort Belknap

Planned activities at Fort Belknap would include first-aid training for all tribal policemen and the necessary improvement of the Fort Belknap ambulance to meet the state law.





IHS HOSPITAL EMERGENCY DEPARTMENT SURVEY

In cooperation with the Montana State Board of Health, Department of Emergency Health Services, a survey of Billings Area Indian Health Service Hospital emergency departments was undertaken in October-November, 1972.

Some Survey Findings:

1. The following types of supplies and equipment were not available in one or more of the IHS hospitals:
  - a. Bronchoscope
  - b. Electroencephalograph
  - c. Cardiac pacemaker
  - d. Thoracotomy equipment.
2. Inhalation therapy support services were not available in two of the three hospitals.
3. An emergency department committee exists in only one of the three hospitals. Only medical and nursing staff were listed on the committee. No administrative, ambulance, or support service staff were reported as representatives on this committee.
4. Written operations manuals for the emergency departments exist at all facilities.
5. The following procedures were reported as not normally being performed in the emergency department in one or more of the hospitals:
  - a. Control of major external hemorrhage;
  - b. Administration of intravenous fluids;
  - c. Cardiopulmonary resuscitation;
  - d. Management of life-threatening cardiac dysrhythmias;
  - e. Endotracheal intubation;
  - f. Tracheostomy;
  - g. Abdomen aspiration.
6. Reference material on the following subjects was not available in the emergency department:
  - a. Public health regulations;
  - b. Radiation exposure;
  - c. Infectious diseases.
7. All persons presenting themselves to the emergency department are seen by a physician.
8. In one hospital no provisions existed for the management of a disturbed patient or a contagious patient.



9. Two hospitals reported that no services were being provided for non-scheduled, non-emergency patients seen nights and weekends.
10. Specialty coverage availability appeared to be available outside the IHS facility within three hours.
11. No structured emergency department training program for physicians exists. However, some training is available to other paramedical personnel and is primarily limited to the orientation of new employees. Two hospitals reported not providing any training for ambulance personnel.
12. The total number of emergency department patients that are brought in by ambulance varied considerably among the three hospitals. Fort Belknap reported 25%, Crow Hospital reported 5%, Blackfeet Hospital reported 65%. At Fort Belknap, 50% of the patients that were brought in by ambulance provided advance notification to the hospital (at Crow 5%, Browning 56%).
13. No hospital reported telemetry from the ambulance to the emergency department nor cardiac care unit. No hospital reported a radio (beeper) paging system for the physicians.
14. Deficiencies were noted in all hospitals on emergency department signs.
15. Hospital medical records prepared in the emergency department were not kept separate from the hospital medical records file.
16. Disaster plans exist at all hospitals, and only one hospital reported other hospitals in the area were not involved in these plans.

#### STATEMENT OF UNMET NEEDS

From the foregoing, and from information contained in the August preliminary report on the Billings Area Emergency Medical Services, it is apparent that the following salient unmet needs exist:

1. Modern, well-equipped ambulance vehicles, sufficient to maintain life support in transit, are required at the Crow, Northern Cheyenne, Fort Belknap and Rocky Boy reservations.
2. Present radio communications equipment in all IHS ambulances do not meet the minimum state standards for radio communications. However, it is apparent that few private or county-owned ambulance services presently meet these standards, scheduled to be in effect January 1, 1973. The Indian Health Service will be assisted by the State in providing radio communications equipment in IHS ambulance systems in the near future. The state has submitted grant proposals to assist local ambulance units in meeting the state ambulance law.
3. Only a cursory review has been made of IHS hospital emergency room adequacy. It is anticipated that further efforts will be made during the calendar year 1973 to identify and correct these facility deficiencies.





## EVALUATION AND IMPLEMENTATION

The complexity and the interdependency of the components of the emergency medical services system poses serious problems in developing realistic evaluation schemes for programs designed to modify that system. The current state-of-the-art in EMS program evaluation is in a developmental phase.

It should be emphasized that this plan represents the first attempt in the state of Montana at comprehensive EMS planning. The evaluation process within the plan will, necessarily, be somewhat crude in design. As a product of implementing this plan, continuing planning, review and evaluation will be accomplished by the program staff. Since no proven evaluation techniques are now available, as the implementation process continues, impact measures will be developed which will improve the program evaluation design.

It is possible to evaluate the overall impact of the plan on the emergency medical care system on the basis of change in mortality rates due to medical emergencies. If modifications of the system are effective, these rates should decrease. Data on Montana mortality rates are available from the Bureau of Records and Statistics of the Montana State Department of Health and Environmental Sciences.

Other measures of program accomplishments can be made by noting progress towards achieving the objectives of the plan. This can be in the form of activities such as: the number of ambulances placed, persons trained, local EMS councils formed, hospitals classified, referral system established, communications equipment purchased and their networks developed. The results of these activities, when compared with the following objectives, will serve as the basis of the program's internal evaluation. In the final analysis, however, the program's total evaluation must rest upon its ability to decrease death and disability in Montana.

The major objective of this plan is to reduce the economic loss to the State of Montana by at least 42 million dollars per year by the end of the 3-year implementation phase at a total cost of no greater than \$321,750.

### AMBULANCE ATTENDANT TRAINING

#### Objective:

To assure that at least 80% of all ambulance attendants in Montana will be EMT-A trained by the end of the third year of implementation.

#### Activities:

1. Program staff shall make personal visits, telephone calls, mailings, and perform related office work as required to administer the program.
2. The EMS staff will sponsor and coordinate a total of 45 EMT-A training courses at selected sites statewide over the 3-year implementation period of 15 courses per year.





3. Organize periodic statewide meetings of EMT course coordinators to assure commonality of courses.
4. Meet with officials of the Superintendent of Public Instruction's office and faculty members of post-secondary education institutions to develop EMT training programs within the appropriate schools.
5. Nine sets of training materials for EMT-A courses shall be purchased and placed in the learning center hospitals. The availability of the materials will be made known to all local councils.
6. EMS staff shall assist local EMS councils in providing EMT-A courses and motivating ambulance attendant participation.
7. EMS staff shall assist councils in obtaining EMT-A instructors and coordinators.

#### Evaluation:

The number of ambulance attendants working in Montana are available through records kept by the EMS Bureau in response to the needs of the Montana ambulance licensing law. The number of ambulance attendants trained as EMT-A's are noted on these records. At the target date, simple computations will indicate the percent of attendants trained in EMT-A.

#### Objective:

To assure that 100% of all ambulance attendants have the minimum level of first-aid training as required by state law by the end of the first year of implementation.

#### Activities:

1. The staff shall make annual inspections of relevant personnel records of the licensed ambulance services to determine the first-aid training levels of the ambulance attendants.
2. The EMS staff will work with the Montana Chapter of the American Red Cross and the various ambulance services to assure that ANRC Advanced First Aid courses are readily available to ambulance personnel where the need for this training is revealed.
3. The EMS staff shall take all necessary steps to assure compliance with the Montana Ambulance Licensing Law.

#### Evaluation:

The EMS program staff will review its ambulance inspection records at the end of the first year of implementation to verify the total compliance with state law. Periodic review of ambulance services allow for additional on-site continuing evaluation.



## BROAD-BASED TRAINING FOR THE GENERAL PUBLIC

### Objective:

To increase by 15% the numbers of persons trained in first aid by the end of the second year of program implementation.

### Activities:

1. The EMS staff will develop a reporting system for first-aid training given by the Montana Chapter of the American Red Cross, the U.S. Bureau of Mines in Montana, the Montana Heart Association, and the EMS Bureau's Medical Self-Help.
2. Visitations to the agencies teaching first aid will be made to obtain their cooperation and participation in the reporting system and to coordinate training activities with the health department.
3. The program staff will make visitations to schools throughout the state to encourage the incorporation of Medical Self-Help and/or American Red Cross training into their curricula.
4. In conjunction with the visitations to the Montana schools, ten ANRC multi-media first aid training kits for adult and secondary education in the schools will be purchased. These kits will be used both for demonstrations to encourage schools to purchase for their own use, and for use as training instruments for the State EMS staff. In addition, these kits will be available on a loan basis to any interested group.
5. Visits will be made to governmental and military agencies, medical related groups, civic and fraternal organizations to encourage implementation or expansion of adult first-aid training programs.
6. The program staff will meet with representatives of industry to provide assistance with first-aid training programs to meet OSHA requirements and to assist industry with disaster planning.
7. The established, Health Department sponsored, Medical Self-Help program will be continued and expanded by devoting more staff time to it.

### Evaluation:

Data from the training activity reports, generated by the proposed reporting system, will indicate the number trained at any given time. These numbers can be compared to the base line data available at the initiation of program activities. If an increase greater than 10% occurs, the objective will have been realized.



## TRAINING FOR MEDICAL PERSONNEL

### Objective:

To provide on a continuing basis training programs to improve the emergency medical skills of personnel working in hospital emergency departments.

### Activities:

1. The EMS staff will make hospital visitations to assist hospitals in the implementation of the "Door to Recovery" training kit. This training program will provide coordination of the EMS system with the other systems within the hospital.
2. The staff will conduct meetings with the director of the learning center hospitals and representatives of WICHE to organize workshops and symposia on emergency care for physicians and nurses.
3. Meetings will be held with officials of the state and local nursing associations, local EMS councils, and hospitals to sponsor workshops in emergency care for nurses.
4. The program staff will confer with various hospital utilization review committees to encourage them to focus their attention upon the operations of their emergency departments to determine need areas in staff training. Priority will be given to the medium and small hospitals whose staffs do not handle a large enough emergency case load to develop and maintain required skills.
5. EMS staff, in cooperation with the Montana Nursing Association and other interested groups, will meet with faculty of schools of nursing to improve their curricula on emergency health care.

### Evaluation:

The effectiveness of these activities will be judged upon follow-up investigations by the program staff. Persons who are actively involved in the hospital level delivery of emergency health care and physicians and nurses will be asked to provide subjective analysis of the various projects. Numerical records of workshops held and numbers of participants shall provide a basis of comparing the number of hospitals having EMS related training programs to those without.

## LOCAL EMS COUNCILS

### Objective:

To establish and support local EMS councils in every community having a recognizable EMS capability by the end of the third year of program implementation.





Activities:

1. The project staff will meet with members of appropriate agencies and health facilities to set up local emergency medical services councils in all communities within the state having recognizable EMS capabilities. To establish these councils, the EMS staff must conduct meetings with community leaders and providers of emergency medical services. This will involve considerable travel expense and staff time. One person from the state staff should be assigned full-time to accomplish this important task.
2. Visitations will be made to the EMS councils to provide consultation for them in maintaining and expanding their activities.
3. The staff will assist local councils to coordinate their activities to follow the general guidelines of the state EMS plan.
4. The staff will meet with councils to offer technical assistance in the acquisition of ambulances, ambulance equipment, and radio equipment.
5. The staff will work with local councils in presentations to local governments for financial support to local EMS activities.
6. Five regional EMS councils will be created by appointing representatives from community EMS councils. These councils will be affiliated, where desirable, to the pertinent CHP Areawide Councils. The purpose of the Regional Advisory Councils is to coordinate on a regional basis the activities of the various local councils.

Evaluation:

The communities having EMS capabilities in Montana have been identified. Records are kept by the EMS Bureau on communities in which EMS councils have been formed. The evaluation of this project will be carried out on an ongoing basis. Both in terms of the percent of potential communities having formed councils, and in terms of subjective analysis by local medical personnel of lessened mortality and morbidity as a result of council activities. Further evaluation of the councils can be made by reviewing the accomplishments of the local councils in terms of the recommendations contained within this plan.

FACILITIESObjective:

To develop and implement a statewide EMS patient referral system by the end of the third program year.

Activities:

1. The program staff will make hospital visitations with Montana members of the Trauma Committee to assist in the classification of emergency departments.



2. All hospitals and physicians will be provided with referral information on which facilities are best staffed and equipped to handle specific kinds of medical emergencies.

Evaluation:

Two types of evaluation of this project are necessary. One involves the actual classification of the facilities which can be measured directly as either classified or not. The other type, more critical and more difficult to obtain, is measurement of the impact on patient care as a result of utilizing the classification and referral system. The methods for evaluation of the impact on patient care will be complex and costly to develop. As the implementation progresses, impact evaluation methodologies will be developed. A necessary part of any evaluation of this program, however, must be measurements of changes in utilization patterns.

Objective:

To develop hospital career programs for EMT-A in three hospitals within the state by the end of the first year.

Activities:

The program staff will visit hospitals and relevant organizations to foster career development for ambulance personnel in hospital-based services. Emphasis will be placed upon utilizing ex-corpsmen for these positions.

Evaluation:

Records of the activities of the EMS staff shall reflect these accomplishments. Reports from involved hospital emergency department staff and administration will provide analysis of the benefits of this program on a continued basis.

LOCATION SIGNS

Objective:

To provide the general public with the means to quickly identify and locate emergency medical facilities.

Activities:

The EMS staff will conduct meetings with hospitals, State Highway Department, and local EMS councils to encourage the placement of proper location signs for all medical facilities.

Evaluation:

Periodic surveys will be made by the EMS staff after the activities have been accomplished to determine their impact. The design of the survey will be developed during the first year of implementation in cooperation with the State Highway Safety Office and the State Highway Department.



CONTINUED EMS PLANNINGObjective:

To revise and improve the plan, seek funding for its support, and carry out public information programs related to the plan.

Activities:

1. The EMS staff will modify and update the plan on a continual basis to reflect changing technology, needs, and priorities.
2. The program staff will innovate and evaluate various mechanisms to measure the impact that the modifications of the emergency medical services systems are having on the state's mortality and morbidity rates.
3. Grant applications to fund various aspects of the EMS system will be prepared by the program staff.
4. A monthly newsletter will be prepared for distribution to ambulance services, hospitals, EMS councils, and other relevant organizations.

PUBLIC TELEPHONESObjective:

To assure that public telephones are available, well-placed and adequately illuminated.

Activities:

1. An evaluation of the location of outdoor public telephones, based upon the availability to the public, will be made in each community in Montana. This evaluation will be done by the EMS staff, Communications Bureau, local EMS councils, and telephone companies.
2. Those public telephones deemed to be ill-placed will be relocated by local EMS councils, local public agencies, and the telephone companies with the assistance of the EMS staff and Communications Bureau.
3. The project staff, Communications Bureau, and the communications committee to the Governor's Advisory Council on EMS will work with the telephone companies to place location information of community emergency medical resources on all public telephones in Montana.

Evaluation:

The EMS staff will compare the number of public telephones replaced to the number needing replacement on a yearly basis.





ROADSIDE EMERGENCY TELEPHONESObjective:

To reduce the time from detection of incident to notification of emergency resources control agency by the placement of roadside emergency telephones.

Activities:

1. Project staff will work with Communications Bureau, Highway Traffic Safety office, and Highway Department in analyzing Rural Accident Clusters and Rural Accident Analysis programs to determine locations for emergency roadside telephones.
2. After necessary locations have been determined, the EMS staff will work with appropriate agencies, local EMS councils, and telephone companies to place these telephones.

Evaluation:

A reduction in time can be determined by evaluating ambulance trip report information.

911 SYSTEMObjective:

To reduce notification time and improve the response of emergency resources by providing the public with an easily remembered and easily dialed telephone number.

Activities:

1. The EMS staff will meet with local EMS councils and public agencies to promote the development of 911 systems on a local basis.
2. The EMS staff will perform liaison tasks between the telephone companies, state agencies, and the local providers on the subject of 911.

Evaluation:

The project staff will evaluate the effectiveness of 911 systems by: (1) the number of 911 systems installed, and (2) by the number of emergency calls made on 911 systems.

DISPATCHINGObjective:

To provide for local dispatching mechanisms which will efficiently and promptly dispatch and coordinate emergency medical resources.



Activities:

1. Through local EMS councils and public agencies, the state EMS staff will promote the establishment of local central dispatching.
2. The EMS staff and the Governor's Advisory Council, acting on recommendations of the communications committee, will develop a dispatcher checklist which will aid dispatchers in the handling of emergency calls.
3. The EMS staff will meet with local EMS councils and public agencies to promote first-aid training for EMS dispatchers.
4. The EMS staff will work with Civil Defense to provide central dispatch centers with emergency power.
5. The EMS staff will cooperate with Civil Defense in promoting adequate interface between central dispatch centers and Emergency Operating Centers.

Evaluation:

The EMS staff will determine the number of dispatch centers established and gather expert opinion on each center's operations.

AMBULANCE-HOSPITAL COMMUNICATIONSObjective:

To insure that a common emergency communication plan is established on a statewide basis which will provide direct ambulance-hospital communications.

Activities:

1. The EMS staff will assist Highway Traffic Safety and the Communications Bureau in establishing a common statewide radio network within three years.
2. EMS staff will meet with local EMS councils and public agencies to assist in the establishment of local radio networks.

Evaluation:

Each year the increase in radio coverage on the emergency frequencies will be measured and plotted on maps by the Communications Bureau and the EMS staff.

AMBULANCE-HOSPITAL RELATIONSObjective:

To guarantee better treatment of the emergency patient by establishing closer ties between the ambulance service and the hospital emergency department.



## AIR AMBULANCES

### Objective:

To insure that air ambulances will provide the same quality service to the emergency patient that is demanded of the ground ambulance.

### Activities:

1. The EMS staff, in cooperation with the Aeronautics Commission, will provide guidelines to all air ambulance operators and physicians in the state within the first year of implementation. These guidelines will provide information on minimum aircraft criteria on performance, dimensions, and equipment carried.
2. The EMS staff will conduct meetings with physicians and the Governor's Advisory Council on EMS in order to gather medical information pertinent to air ambulances.
3. The EMS staff will disperse medical information concerning the use of air ambulances to all physicians within the state.
4. The EMS staff, in cooperation with the Aeronautics Commission, will determine from on-site observations and expert opinion if air ambulance guidelines are being followed.

If evaluation indicates that guidelines are ineffectual at the end of the second year of implementation, the EMS staff will seek legislation to regulate the operation of air ambulances.

### Evaluation:

If legislation is enacted, annual inspections by the EMS staff will determine whether air ambulances are meeting state requirements.

## HELIPORTS

### Objective:

To provide information on the construction and use of heliports to all hospitals in Montana.

### Activities:

The project staff will assist Montana Aeronautics Commission in the development of heliports.

### Evaluation:

From on-site inspection, the number of heliports and heliport traffic will be determined.





Activities:

1. The EMS staff will meet with local EMS councils and actively promote better relations between ambulance services and hospitals.
2. The EMS staff will provide literature and information on ambulance-hospital relations to all providers of emergency medical services and interested local citizens' groups within the state.

Evaluation:

By annual ambulance inspections, the relationship of ambulance services to hospitals will be determined. From the trip report form, the impact on the patient resulting from closer ambulance-hospital relations will be measured.

TRIP REPORT FORMObjective:

To provide emergency medical services with a trip report form that will be of assistance in providing better emergency health care to the patient.

Activities:

1. The EMS staff will print and distribute to all ambulance services trip report forms within the first six months of the implementation phase.
2. The EMS staff will provide information on the trip report's use by staffs of all ambulance services and emergency departments within the first six months of the implementation phase.
3. The EMS staff and Records and Statistics Bureau, State Department of Health will establish a computerized program to utilize selected information from the report by the end of the first year of implementation.
4. At the beginning of the second year of implementation, the EMS staff will begin collection and analysis of selected information from the form.
5. During the second year of implementation, the EMS staff will distribute analyzed information to EMS councils, ambulance services, local community leaders, and selected public agencies.

Evaluation:

The EMS staff will analyze information being generated from the form to determine if: (1) the right kinds of data are being collected; (2) the information is actually having an impact upon the EMS system; and (3) analyzed data is producing changes upon the total methods of evaluating the EMS system.



## VEHICLE DESIGN CRITERIA

### Objective:

To insure that all ambulance vehicles meet design criteria necessary to provide for the safety and well being of the patient.

### Activities:

1. The EMS staff will continue to inspect and license all ambulance services on a yearly basis.
2. The project staff will provide vehicle design guidelines to all ambulance services and local EMS councils.

### Evaluation:

From annual inspections, it will be determined whether ambulance vehicles are meeting design criteria.

## EQUIPMENT

### Objective:

To insure that equipment standards are of sufficient quality and quantity to provide lifesaving techniques to the emergency patient.

### Activities:

1. The EMS staff will provide equipment guidelines to all ambulance services and local EMS councils.
2. Project staff will meet with local EMS councils to promote the use of the Lettermen Equipment Exchange System.

### Evaluation:

The quality and quantity of equipment will be determined from annual inspections.

## HOSPITAL DISASTER PLANNING

### Objective:

To insure that all hospitals maintain a disaster plan that will enable them to respond quickly and effectively to a disaster.

### Activities:

1. The EMS staff will meet with local EMS councils and hospitals to promote the development of hospital disaster plans.
2. The EMS staff will meet with local EMS councils and hospitals to review existing hospital disaster plans and provide for necessary changes.



3. The EMS staff will meet with regional EMS councils to provide for regional coordination and assistance in disaster situations.
4. Pertinent literature will be gathered by project staff on disaster planning and dispersed to all local and regional EMS councils.

Evaluation:

By annual on-site inspections, the EMS staff will determine the adequacy of all hospital disaster plans. The adequacy of these plans will be determined by comparing them to the suggested plan found on pages 63-64.

COMMUNITY DISASTER PLANNING

Objective:

To insure that community disaster plans incorporate all community emergency medical resources within their plans.

Activities:

The EMS staff will assist local EMS councils and government officials in incorporating emergency medical resources within community disaster plans.

Evaluation:

By annual on-site inspections, the EMS staff will determine the level of coordination of all community emergency resources.

DISASTER EXERCISES

Objective:

To determine the effectiveness of hospital disaster plans by conducting annual drills.

Activities:

1. The EMS staff will meet with local EMS councils, community leaders, and Civil Defense directors to organize annual hospital disaster drills.
2. The EMS staff will assist in conducting the annual disaster drills.

Evaluation:

After each disaster drill, a critique session will be held. From this critique, an evaluation can be made of the effectiveness of each hospital disaster plan.





INDUSTRYObjective:

To insure that all industrial plants can react promptly and effectively to industrial and community disasters.

Activities:

1. The EMS staff will meet with labor and management leaders to promote the creation of industrial disaster plans.
2. The EMS staff will assist industries in the establishment of disaster plans.
3. The project staff will assist industries in conducting disaster drills.
4. The EMS staff will gather pertinent literature on industrial disaster planning and disperse this information to labor and management leaders.

Evaluation:

By annual on-site inspections, the EMS staff will determine the adequacy of all industrial disaster plans by comparing them to the guidelines found on page 66.

AIRPORTSObjective:

To guarantee that all airports serving commercial airlines have immediately available medical supplies and equipment to handle at least 100 casualties.

Activities:

The EMS staff and Montana Aeronautics Commission will meet with all airport managers in order to establish the type and amount of medical supplies to be located at each airport.

Evaluation:

By annual on-site inspections, the EMS staff will determine if medical supplies on hand are adequate.

STATE DISASTER PLANObjective:

To assure that the health annex to the State Disaster Plan is capable of responding quickly and effectively to a major disaster.

Activities:

The EMS staff will provide on-going planning to update the health annex.



Evaluation:

By participating in the annual State Disaster Exercise, the project staff will be able to evaluate the effectiveness of the health annex.

PACKAGED DISASTER HOSPITAL AND HOSPITAL RESERVE DISASTER INVENTORYObjective:

To assure that hospitals in Montana have the capability to maintain operations during a major disaster such as a nuclear attack.

Activities:

1. The EMS staff will make visitations to local Civil Defense Directors and hospitals in order to: (a) make a yearly inventory of stockpiles; (b) encourage the rotation of pharmaceutical supplies; and (c) insure that property control records are maintained.
2. The EMS staff will provide orientation and training in the use of the training kit for Packaged Disaster Hospital units.
3. The EMS staff will encourage and help in the use of the training kit for Packaged Disaster Hospital units.

Evaluation:

By annual on-site inspections, the EMS staff will determine the level of maintenance of PDH and HRDI units.



AMERICAN NATIONAL RED CROSS

The American National Red Cross provides a selection of first-aid courses beginning with basic first aid and continuing through advanced first aid. In fiscal year 1971-1972, the Montana Division of the American National Red Cross trained 10,864 persons in first aid; 8,299 standard and 2,565 advanced first aid certificates were issued. In eight counties<sup>1</sup> no American National Red Cross first-aid instruction was given. It is estimated that 29,000 persons in Montana are holders of current American Red Cross first-aid cards. In addition, many thousands more have had first-aid training, but have not maintained current cards. At the present rate, an average of 10,000 persons are trained in American Red Cross first aid yearly; but due to OSHA requirements, it is anticipated that this figure will more than double in 1973.

A pilot first-aid training program at the grade school level has been initiated in Lewis and Clark County. This cooperative effort between the local school district and the Montana Chapter of the American National Red Cross will explore the effectiveness of the basic first-aid training given in the middle grades.

Although several junior high and high schools within the state include American National Red Cross or Medical Self-Help instruction in their curricula, this training is not provided on a coordinated statewide basis.

The tables on the following pages indicate the county by county breakouts for American Red Cross training in Montana, 1971-1972.

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<sup>1</sup>Carter, Fallon, Glacier, McCone, Petroleum, Rosebud, Sweet Grass and Wibaux.





Red Cross First-Aid Certificates IssuedMontana Fiscal Year 1971-1972

<u>Local Chapters</u>	<u>Total</u>	<u>Standard</u>	<u>Advanced</u>
Area #1 <sup>2</sup>			
Flathead	880	679	201
Granite	7	7	0
Lake	142	109	33
Lincoln	391	296	95
Mineral and Missoula	1,982	1,246	736
Powell	50	50	0
Sanders	34	19	15
Ravalli	<u>234</u>	<u>211</u>	<u>23</u>
Sub Total	3,720	2,617	1,103
Area #2			
Beaverhead	292	173	119
Broadwater	19	19	0
Deerlodge	96	59	37
Gallatin	582	379	203
Jefferson	96	89	7
Lewis & Clark	283	140	143
Madison	0	0	0
Meagher	38	38	0
Silver Bow	<u>478</u>	<u>433</u>	<u>45</u>
Sub Total	1,884	1,330	554

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<sup>2</sup>These areas have been made to correspond to the six Medical Self-Help areas.



<u>Local Chapters</u>	<u>Total</u>	<u>Standard</u>	<u>Advanced</u>
Area #3			
Bighorn	0	0	0
Carbon	68	53	15
Golden Valley	0	0	0
Musselshell	0	0	0
Park	163	103	60
Stillwater	0	0	0
Sweet Grass	0	0	0
Wheatland	0	0	0
Yellowstone	<u>1,486</u>	<u>1,144</u>	<u>342</u>
Sub Total	1,717	1,300	417
Area #4			
Custer	31	31	0
Carter	0	0	0
Dawson	205	205	0
Fallon	0	0	0
Powder River	31	24	7
Prairie	30	30	0
Rosebud	0	0	0
Treasure	0	0	0
Wibaux	<u>0</u>	<u>0</u>	<u>0</u>
Sub Total	297	290	7



<u>Local Chapters</u>	<u>Total</u>	<u>Standard</u>	<u>Advanced</u>
Area #5			
Daniels	52	31	21
Garfield	52	52	0
McCone	0	0	0
Petroleum	0	0	0
Phillips	67	25	42
Richland	43	39	4
Roosevelt	186	173	13
Sheridan	10	10	0
Valley	<u>153</u>	<u>153</u>	<u>0</u>
Sub Total	563	483	80
Area #6			
Blaine	36	36	0
Cascade	1,846	1,598	248
Choteau	28	28	0
Fergus	103	81	22
Glacier	0	0	0
Hill	375	346	29
Judith Basin	27	27	0
Liberty	13	13	0
Pondera	95	70	25
Teton	77	52	25
Toole	<u>83</u>	<u>28</u>	<u>55</u>
Sub Total	2,683	2,279	404
TOTAL	<u>10,864</u>	<u>8,299</u>	<u>2,565</u>



Year	1990	1991	1992	1993
1	100	100	100	100
2	100	100	100	100
3	100	100	100	100
4	100	100	100	100
5	100	100	100	100
6	100	100	100	100
7	100	100	100	100
8	100	100	100	100
9	100	100	100	100
10	100	100	100	100
11	100	100	100	100
12	100	100	100	100
13	100	100	100	100
14	100	100	100	100
15	100	100	100	100
16	100	100	100	100
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92	100	100	100	100
93	100	100	100	100
94	100	100	100	100
95	100	100	100	100
96	100	100	100	100
97	100	100	100	100
98	100	100	100	100
99	100	100	100	100
100	100	100	100	100

# FIRST AID READY REFERENCE CHART

COURSES	MINIMUM HRS	AGE OR GRADE	PREREQUISITES	CERTIFICATION PERIOD	AWARDS RECEIVED
BASIC FIRST AID	Time it takes student	Fifth grade reading level. No age limit	None	3 years	Basic Cert. 1728 Emblem & Decal
JUNIOR FIRST AID	minimum of 15 hours	11 years or have completed 5th Grade	None	3 years	Textbook out of print 1308 Certs. will cont.
STANDARD FIRST AID	minimum of 10 hours	14 years or have completed 8th Grade	None	3 years	Cert. #1309 Emblem & Decal
STANDARD MULTIMEDIA	minimum of 7½ hours	Same as Standard	None	3 years	Cert. #1730 Emblem & Decal
STANDARD REFRESHER	6 hrs minimum	Same as Standard	Current Standard Card	3 years	Cert. #1309
ADVANCE FIRST AID	16 hrs minimum	15 yrs or 10th Grade	Current Standard Card	3 years	Cert. #1310 Emblem, Decal or Pin
ADVANCE REFRESHER	8 hrs minimum	Same as Advance	Current Advance Card	3 years	Cert. #1310
ADVANCE RETRAINING	16 hours	Same as Advance	Enroll within 2 yrs of expiration date of Adv. card	3 years	Cert. #1310
COMBINE COURSE Standard & Advance (Upon special permission from Chapter)	22 hrs minimum (by combining 4 hr review eliminated)	15 years or 10th Grade	A NEED for groups or organizations wanting to obtain Advance First Aid training level	3 years	Cert. #1310
INSTRUCTOR Lecture Discussion	15 hrs minimum	17 years of age	Current Advance Card	2 yr period	Completion Cert Form #5736 Authorization
INSTRUCTOR REVIEW Lecture Discussion	9 hrs minimum	Same as FAI	Current FAI Authorization	2 years	Completion Cert Form #5736 Authorization
INSTRUCTOR Multimedia System	8 hrs minimum	Same as FAI	Current Standard Multimedia Certificate	2 yr period	Completion Cert Form #5736 Authorization
TEACHER INSTRUCTOR BASIC FIRST AID	3 hour orientation	Same as FAI	None for Prof. Teachers At least Basic Non Teacher	2 yr period	Completion Cert Form #5736 Authorization
INSTR: Professional Teacher under Contract	3 hour orientation current Advance First Aid card)		TEACHER UNDER CONTRACT	2 yr period	Completion Cert Form #5736 Authorization
INSTR: Dr. of Medicine Dr. of Osteopathy	Eligible for appointment, if they plan to teach for the Chapter. Basis of Professional Training & endorsed by Chapter.			2 years	Authorization Cert 1303

NOTE: THE DEPARTMENT OF LABOR HAS RECOGNIZED THE AMERICAN RED CROSS BASIC, STANDARD, STANDARD MULTIMEDIA AND ADVANCE FIRST AID COURSE AS MEETING THE STANDARDS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT.



MEDICAL SELF-HELP

Since 1962, the State Department of Health, in cooperation with Civil Defense and American National Red Cross, has offered Medical Self-Help instruction in Montana. The goal of this program is to train at least one member of each family in the state in Medical Self-Help. Since first offered in the state, over 122,000 persons have been trained in Medical Self-Help.<sup>1</sup> This figure represents more than 22% of the population over 12 years of age (1970 census) in Montana. Currently, Medical Self-Help training is reaching an additional 14,000 persons yearly. About 11% of the persons trained in Medical Self-Help now concurrently receive certification in American National Red Cross Standard First Aid. The percent of the population over 12 years old reached by Medical Self-Help varies from 8.0% trained in Judith Basin County to 43% trained in Blaine County. As the number of persons trained in Medical Self-Help reaches<sup>2</sup> or exceeds the number of families in the state, with certain qualifications, we may view the stated goal of this program as being reached. When seen from this perspective, the estimated percent of families, by county, having at least one member trained in Medical Self-Help ranges from 19.1% in Judith Basin County to 102.4% in Blaine County. The average for the state is 50.8% of the target population reached. The following table shows the estimated percent of the number of families and unrelated persons trained in Medical Self-Help in Montana.

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<sup>1</sup>The Medical Self-Help card is not a dated card and the technical skills in first aid of persons trained more than three years ago may be questionable.

<sup>2</sup>More than one member of some families may have taken this training. Others may have repeated the course and have been counted more than once. Also, population changes have occurred since the program began which might affect the percentages. Although the populations of certain counties have been greatly affected by massive migration of persons due to construction work or the termination of employment, these changes are estimated not to exceed 4% statewide.



Medical Self-Help in MontanaFiscal Years 1962-1972

	<u>Number Trained</u>	<u>Pop.<sup>3</sup> +12</u>	<u>Percent Trained</u>	<u>No. of Families<sup>4</sup> and Unrelated Individuals</u>	<u>Percent Trained</u>
Area #1					
Flathead	5,703	29,968	19.0%	12,850	44.4%
Granite	573	2,156	26.6%	1,010	56.7%
Lake	1,658	11,133	14.9%	4,782	34.7%
Lincoln	3,515	13,237	26.6%	5,562	63.2%
Mineral	204	2,193	9.3%	921	22.1%
Missoula	10,753	45,078	23.9%	21,691	49.6%
Powell	738	5,184	14.2%	2,071	35.6%
Sanders	740	5,485	13.5%	2,396	30.9%
Ravalli	<u>4,395</u>	<u>11,329</u>	<u>38.8%</u>	<u>5,030</u>	<u>87.4%</u>
Sub Total	29,382	125,760	23.4%	57,213	51.3%
Area #2					
Beaverhead	1,471	6,376	23.1%	3,252	45.2%
Broadwater	202	1,956	10.3%	828	24.4%
Deerlodge	4,470	12,446	35.9%	5,006	89.3%
Gallatin	3,231	26,177	12.3%	13,915	23.2%
Jefferson	447	4,080	10.9%	1,509	29.6%
Lewis & Clark	6,130	25,630	23.9%	12,028	51.0%
Madison	886	4,012	22.1%	1,786	49.6%
Meagher	177	1,664	10.6%	788	22.5%
Silver Bow	<u>2,905</u>	<u>32,416</u>	<u>9.0%</u>	<u>14,687</u>	<u>19.8%</u>
Sub Total	19,919	114,757	17.4%	53,799	37.0%

<sup>3</sup>Source: "Population 12 Years Old and Older by County of Residence," Montana, 1970 (Census date).

<sup>4</sup>Source: "Income and Poverty Status in 1969 for Counties," Montana, 1970 (Census date).





	<u>Number Trained</u>	<u>Pop. +12</u>	<u>Percent Trained</u>	<u>No. of Families and Unrelated Individuals</u>	<u>Percent Trained</u>
Area #3					
Bighorn	1,107	7,174	15.4%	2,786	39.7%
Carbon	698	5,793	12.0%	2,712	25.7%
Golden Valley	87	774	11.2%	342	25.4%
Musselshell	955	3,018	31.6%	1,308	73.0%
Park	2,011	9,082	22.1%	4,086	49.2%
Stillwater	400	3,722	10.7%	1,613	24.8%
Sweet Grass	639	2,419	26.4%	1,079	59.2%
Wheatland	625	2,014	31.0%	939	66.6%
Yellowstone	<u>17,156</u>	<u>67,301</u>	<u>25.5%</u>	<u>30,290</u>	<u>56.6%</u>
Sub Total	23,678	101,297	23.4%	45,156	52.4%
Area #4					
Custer	2,834	7,466	37.9%	4,184	67.7%
Carter	177	1,517	11.7%	665	22.6%
Dawson	3,250	8,397	38.7%	3,570	91.0%
Fallon	1,098	3,014	36.4%	1,301	84.4%
Powder River	285	2,114	13.5%	895	31.8%
Prairie	175	1,451	12.1%	636	27.5%
Rosebud	740	4,451	16.6%	2,007	36.9%
Treasure	158	824	19.2%	322	49.1%
Wibaux	<u>402</u>	<u>1,122</u>	<u>35.8%</u>	<u>486</u>	<u>82.7%</u>
Sub Total	9,119	30,356	30.0%	14,066	64.8%



	<u>Number Trained</u>	<u>Pop. +12</u>	<u>Percent Trained</u>	<u>No. of Families and Unrelated Individuals</u>	<u>Percent Trained</u>
Area #5					
Daniels	530	2,467	21.5%	1,034	51.3%
Garfield	480	1,371	35.0%	550	87.3%
McCone	523	2,186	23.9%	877	59.6%
Petroleum	217	529	41.0%	255	85.1%
Phillips	737	4,103	18.0%	1,805	40.8%
Richland	1,654	7,501	22.1%	3,122	53.0%
Roosevelt	1,401	7,680	18.2%	3,157	44.4%
Sheridan	1,252	4,507	27.8%	1,941	64.5%
Valley	<u>2,882</u>	<u>8,526</u>	<u>33.8%</u>	<u>3,710</u>	<u>77.7%</u>
Sub Total	9,676	38,870	24.9%	16,454	58.8%
Area #6					
Blaine	2,189	5,029	45.5%	2,137	102.4%
Cascade	13,791	61,257	22.5%	28,362	48.6%
Choteau	1,800	5,051	35.6%	2,237	80.5%
Fergus	3,050	9,803	31.1%	4,204	72.5%
Glacier	2,022	7,705	26.2%	3,195	63.3%
Hill	2,325	13,269	17.5%	6,081	38.2%
Judith Basin	170	2,116	8.0%	891	19.1%
Liberty	433	1,796	24.1%	687	63.0%
Pondera	1,382	5,015	27.6%	2,116	65.3%
Teton	1,237	4,776	25.9%	2,018	61.3%
Toole	<u>945</u>	<u>4,522</u>	<u>20.9%</u>	<u>1,910</u>	<u>49.5%</u>
Sub Total	29,344	120,338	24.4%	53,831	54.5%
TOTAL	<u>122,197</u>	<u>542,677</u>	<u>22.5%</u>	<u>240,519</u>	<u>50.8%</u>



BUREAU OF MINES

First-aid training was not considered seriously in the United States until 1897, when several railroad companies furnished first-aid packets and books of instruction to some of their men. In 1910, the American Red Cross established a separate First Aid Department, and the Bureau of Mines started active training of miners.

First-aid training by the Bureau of Mines in Montana, was probably begun in the mining community of Butte around 1911 or 1912. Since that time, the Bureau's instructors have conducted training in the mining areas of the state at the request of the mining companies.

In 1926, a cooperative first-aid training plan was developed to meet the large number of requests for training. Through this plan, the entire personnel of mines and plants could be trained quickly in a single campaign by utilizing Bureau-trained company employees. All classes were conducted under the supervision of a Bureau of Mines representative. Various mining companies in Montana have utilized the cooperative plan in training their personnel.

In Montana, the Anaconda Company has been influential in maintaining active interest in first aid by holding contests between first-aid teams. The company's facilities at Great Falls have been the site of an inter-company first-aid contest for nearly 30 years, and similar contests were held annually in Butte by the Anaconda Company until 1967.

During the past three years, 933 persons have been trained in Bureau of Mines first aid in Montana. This training was conducted through the cooperative plan, and for the most part, was given in Butte, Great Falls, Libby, and Fort Peck, Montana. The Bureau of Mines estimates that approximately 500 first-aid cards will be issued during the first six months of 1973. In addition, an estimated 1600 cards will have been issued between 1972 and 1976.

The cooperative training plan is structured on a continuing basis. Because there are only nine instructors to cover six states in the training center area, the Bureau of Mines first-aid training activities are somewhat limited. It is necessary, therefore, to rely upon the qualified instructors from the various communities that participate in the cooperative training plan for teaching personnel.





## MONTANA HEART ASSOCIATION

The Montana Heart Association has several training programs designed for both professional medical personnel and the general public. The major emphasis of the Heart Association is to provide training materials and instruction for nurses. The Montana Heart Association has a large inventory of training equipment, slides, and films which have been made available to the hospitals throughout the state. By using these materials, the Montana Heart Association trains approximately 475 nurses in the state per year. In addition, the association provides funding to send nurses out of state for further advanced training.

The Heart Association has recognized that public education is vital in reducing heart attack deaths. It offers to the general public a large number of publications and training aids relevant to broad-based training for coronary problems. Also, the Heart Association, in cooperation with the American National Red Cross, is currently developing criteria for a CPR training program.

Efforts are now being made to improve the coordination of Montana Heart Association activities with Regional Medical Programs, the State Department of Health, and the American National Red Cross. In the event that a policy is adopted which advocates CPR training for the general public, further cooperation and coordination between these agencies will be required.

## NATIONAL SKI PATROL SYSTEM, INC.

### FACTS AND FIGURES

#### Training, First Aid

Every patroler must maintain a current American Red Cross Advanced First Aid Certificate, and attend an 8 hour refresher annually plus 4 hours of annual on-the-hill training. Approximately 10% of the patrolers in the Northern Division holds an American Red Cross First Aid Instructor Certificate. Some have completed EMT courses.

#### Current Membership

The current membership, including the continental United States, Alaska and Europe is 27,000.

#### Total Fractures Handled

In 1971-72, the total number of fractures handled was 84,000.

#### Headquarters

The headquarters for the National Ski Patrol System, Inc. are in Denver, Colorado.

#### Year Founded

The Patrol was founded in 1938.



NATIONAL SKI PATROL SYSTEM, INC.NORTHERN DIVISIONMONTANA PATROLS

<u>Patrol Name</u>	<u>Location</u>	<u>Total Members (1971-72)</u>
Administrative (Div. Off. & Adv.)	Statewide	13
Anaconda	Anaconda	14
Bear Canyon	Bozeman	Not registered in 1972 with N.S.P.S.
Bear Paw	Havre	28
Bear Tooth	Billings	72
Belmont	Helena	28
Big Mountain	Whitefish	12
Bridger Bowl	Bozeman	86
Beef Trail	Butte	10
Corona Lake	Plains	11
Deep Creek	Wise River	24
Grassy Mountain	Townsend	8
Great Falls	Great Falls	45
Lost Trail	Hamilton	15
Missoula	Missoula	45
Maverick Mountain	Dillon	22
Silver Mountain	Lewistown	34
Snow Bowl	Missoula	43
Turner Mountain	Libby	29
<u>Z-T</u>	<u>Butte</u>	<u>22</u>
TOTAL	19 (excl. admin.)	561



NATIONAL SKI PATROL SYSTEMNORTHERN DIVISIONRegistered Ski Patrols 1972-1973Anaconda Ski Patrol N-1

Ed Guay, 1914 Haggin, Anaconda, MT 59711, Leader

Ed Forwood, 1220 W. 3rd, Anaconda, MT 59711, Ass't Leader

Antelope Butte Ski Patrol N-2

Bob Duncan, 1014 Burton, Sheridan, WY 82801, Leader

Andy Smith, Shell, WY 82441, Ass't Leader

Bear Canyon Ski Patrol N-3

Ronald L. Nichelin, Rt. 2, Box 174B, Bozeman, MT 59715, Leader

Rene Nichelin, " " " " " " Ass't Leader

Bear Paw Ski Patrol N-4

Robert Rector, 18 Hidden Valley, Havre, MT 59501, Leader

Walter Warrick, Havre, MT 59501, Ass't Leader

Beartooth Ski Patrol N-5

Alf Lecaptain, 2404 Sunnyview Lane, Billings, MT 59102, Leader

Charles Jerabek, 1343 Granite, Billings, MT 59102, Ass't Leader

Belmont Ski Patrol N-6

Bill Vollmer, 1911 Highland, Helena, MT 59601, Leader

Mike Griff, c/o Union Bank, Helena, MT 59601, Ass't Leader

Big Mountain Ski Patrol N-7

Tom Unger, c/o The Big Mountain, Whitefish, MT 59937, Leader

Gene Evans, c/o The Big Mountain, Whitefish, MT 59937, Ass't Leader

Bridger Bowl Ski Patrol N-8

Duain Bowles, 809 S. 3rd, Bozeman, MT 59715, Leader

Kim Mills, 11 W. College, Bozeman, MT 59715, Ass't Leader

Beef Trail Ski Patrol N-9

James Lester, 928 Hornet, Butte, MT 59701, Leader

Bill Woody, 703 N. Excelsior, Butte, MT 59701, Ass't Leader

Casper Mountain Ski Patrol N-10

Gay Nations, 115 Northway, Casper, WY 82601, Leader

Oda Sulley, 3740 S. Coffman, Casper, WY 82601, Ass't Leader

Ken Hoff, 1250 N. Center, Casper, WY 82601, Ass't Leader

Circle A Ski Patrol N-28

Larry Street, 67 Poppy, Casper, WY 82601, Leader

Cody Ski Patrol N-11

Timothy Comstock, Rt. 1, Cody, WY 82414, Leader

Jack Eckley, 2108-10th, Cody, WY 82414, Ass't Leader





Corona Lake Ski Patrol N-12

Alvin Amundson, Box 519, Plains, MT 59859, Leader

Deep Creek Ski Patrol N-13

Nevin Guderian, Wise River, MT 59762, Leader

Jim Gnose, Wise River, MT 59762, Ass't Leader

Grassy Mountain Ski Patrol N-16

Tony Francisco, 223 Broadway, Townsend, MT 59644, Leader

Darlene Doig, Townsend, MT 59644, Ass't Leader

Great Falls Ski Patrol N-17

H. D. (Bud) Powell, 9 Prospect Dr., Great Falls, MT 59401, Leader

Arnie Swanson, 401 Division Rd., Great Falls, MT 59401, Ass't Leader

Lost Trail Ski Patrol N-18

Donald Maclean, M.D., 1224 W. Main, Hamilton, MT 59840, Leader

Lee Mattson, 612 N. 7th, Hamilton, MT 59840, Ass't Leader

Meadowlark Ski Patrol N-19

Mike Rutledge, 740 S. 14th, Worland, WY 82401, Leader

Ray Menke, 1309 Pulliam Ave, Worland, WY 82401, Ass't Leader

Missoula Ski Patrol N-20

Robert W. Fields, 6225 Rattlesnake Rd., Missoula, MT 59801, Leader

Robert Weidman, 409 King St., Missoula, MT 59801, Ass't Leader

Lander Ski Patrol (Formerly Sinks Canyon) N-24

Donald Wolcotte, 586 Buena Vista Dr., Landers, WY 82520, Leader

Dr. Harry Tipton, Hillcrest Dr., Landers, WY 82520, Ass't Leader

Maverick Ski Patrol (Formerly Rainy Mountain) N-22

Swede Troedsson, 710 S. Washington, Dillon, MT 59725, Leader

Dick Chaffin, Grant Star Rt., Dillon, MT 59725, Ass't Leader

Silver Mountain Ski Patrol N-23

Mitch Miller, 226 SW Cedar, Lewistown, MT 59456, Leader

Gordon Kaufman, 407 Wendell, Lewistown, MT 59457, Ass't Leader

Snow Bowl Ski Patrol N-21

Rusty Thamarus, M.D., 301 Agnes, Missoula, MT 59801, Leader

Ed Rosenkranz, 415 E. Kent, Missoula, MT 59801, Ass't Leader

Teton Ski Patrol N-27

Leif Larsen, Box 416, Choteau, MT 59422, Leader

Ron Hinman, Choteau, MT 59422, Ass't Leader

Turner Mountain Ski Patrol N-25

Thomas Bonde, Rt. 2, Box 76, Libby, MT 59923, Leader

Ray Hammons, Rt. 1, Box 977, Libby, MT 59923, Ass't Leader

Z-T Ski Patrol N-26

Bill Dockin, 1816 Oregon, Butte, MT 59701, Leader

Pat Richardson, 431 S. Jackson, Butte, MT 59701, Ass't Leader



NATIONAL SKI PATROL SYSTEMNorthern Division Officers and Advisors

1972 - 1973

Division Director: Howard Bronsdon, 335 Garden Ck Dr, Casper, WY 82601Ass't Division Director: Jacques Mangones, 1925 Aberdeen, Butte, MT 59701Division Treasurer: John Peterson, 4211 Rainbow Dr., Missoula, MT 59801Division Secretary: Diana Penwell, 306 Clark Ave., Billings, MT 59102WESTERN MONTANA REGIONRegional DirectorJacques Mangones  
1925 Aberdeen  
Butte, MT 59701Section ChiefsJim Price  
805 Hilda  
Missoula, MT 59801  
(Big Mtn, Corona Lake,  
Missoula, Snow Bowl,  
Turner Mtn Patrols)Dave Kneedler  
705 Rhode Island  
Helena, MT 59601  
(Belmont, Grassy Mtn,  
Butte, Z-T Patrols)Jim Whitlock  
Box 19  
Hamilton, MT 59840  
(Anaconda, Deep Creek,  
Lost Trail, Rainy Patrols)EASTERN MONTANA REGIONRegional DirectorJoe Gregory  
2812 Woody  
Billings, MT 59101Section ChiefsJohn Murray  
1134 Lincoln  
Havre, MT 59501  
(Gt. Falls, Teton,  
Bear Paw Patrols)Tom Hines  
1834 Forest Park Dr.  
Billings, MT 59102  
(Beartooth, Bear  
Canyon, Bridger Bowl,  
Silver Mtn Patrols)WYOMING REGIONRegional DirectorBill Chambers  
3109 Garden Ck Dr  
Casper, WY 82601Section ChiefsJim Kyner  
505 S. 18th  
Worland, WY 82401  
(Cody, Antelope  
Butte, Meadowlark  
Ski Patrols)Gerald Schilling  
P.O. Box 195  
Evansville, WY  
(Casper, Circle A,  
Sink Canyon Patrols)DIVISION ADVISORSAvalancheLou Demorest  
3760 Carmel  
Casper, WY 82601First AidDon Freeberg  
P.O. Box 615  
Worland, WY 82401PolarisJoe Taylor  
3417 4th Ave So.  
Gt. Falls, MT 59401AwardsRegional Director  
Joe GregoryJuniorSki MountaineeringRich McKamy  
1035 Miles Ave.  
Billings, MT 59102CommunicationsEl Williams  
425 Agnes  
Missoula, MT 59801LegalBob Holter  
Box 847  
Bozeman, MT 59715Ski SafetyRegional Director  
Bill Chambers



Equipment, Professional

Tom Unger  
Big Mountain  
Whitefish, MT 59937

Public Relations

Diana R. Penwell  
Division Secretary

Medical

Rusty Thamarus, M.D.  
301 Agnes  
Missoula, MT 59801

National Medical Advisor

Dr. Warren Bowman  
P.O. Box 2555  
Billings, MT 59103

Testing

Fred Klein  
824 Country Club Road  
Casper, WY 82601

REGIONAL ADVISORS

WESTERN MONTANA REGION

Pat Shevalair  
850 Sierra  
Helena, MT 59601

Pat Richardson  
431 S. Jackson  
Butte, MT 59701

EASTERN MONTANA REGION

Avalanche

Rick Mattson  
2005 Northridge Circle  
Billings, MT 59102

First Aid

Carol Janecka  
1024 8th Ave. NW  
Great Falls, MT 59401

WYOMING REGION

Al Hallcroft  
Box 266  
Basin, WY 82410

To be appointed.

Ski Mountaineering

Jim Whitlock  
Box 19  
Hamilton, MT 59840

Stanley King  
1024 8th Ave. NW  
Great Falls, MT 59401

Don Wolcott  
586 Buena Vista  
Lander, WY 82520

Testing

Pat Shevalair  
850 Sierra  
Helena, MT 59601

John Bone  
723 Hauser  
Red Lodge, MT 59068

Bill Chambers  
3109 Garden Ck Rd  
Casper, WY 82601





DIRECTORY OF MONTANA AMBULANCE SERVICES

JANUARY 1973

Absarokee Volunteer Ambulance Service

Bob Noe  
Absarokee, MT 59001  
Telephone: 328-3061

Anaconda City-County Ambulance

Lee Fitzpatrick  
Deer Lodge County Courthouse  
Anaconda, MT 59711  
Telephone: 563-2610

Anaconda County Reduction Ambulance

Victory Vanasko  
Anaconda Company  
Anaconda, MT 59711  
Telephone: 563-5211

G & G Ambulance Service

E. L. Glass  
Baker, MT 59313  
Telephone: 778-2001

Belt Volunteer Fire Department

Jack Burgess, Fire Chief  
Belt, MT 59412

Big Sandy Volunteer Ambulance

Jerry Martin  
Box 385  
Big Sandy, MT 59520  
Telephone: 378-2875

Lowry Ambulance Service

Dean Lowry  
Box 280  
Big Timber, MT 59011

Billings Ambulance Service

Dick Taylor  
2025 8th Ave N  
Billings, MT 59101  
Telephone: 245-5296

Billings Speedway

A. C. Bull  
107 21st St W  
Billings, MT 59101  
Telephone: 252-9949

American Red Cross

Midland Empire Chapter  
Bob Fears  
643 Grand Ave  
Billings, MT 59101  
Telephone: 245-3512

City of Boulder Ambulance

Bob Grey  
Boulder, MT 59632  
Telephone: 225-3662

Lee Ambulance Service

Bob Donin  
Box 1192  
Bozeman, MT 59715  
Telephone: 587-1055

Clarkfork Valley Ambulance

Jim Anderson  
Box W  
Bridger, MT 59014  
Telephone: 662-3529

Jesse Ambulance Service

Kenneth Jesse  
201 East Holt  
Broadus, MT 59317  
Telephone: 436-2451

Browning Ambulance Service

Vern Hartford  
Box 458  
Browning, MT 59417  
Telephone: 338-2060

Berkeley Emergency Squad

Anaconda Company  
Butte, MT 59701  
Telephone: 723-4311

A-1 Ambulance Service

Allan Garret  
1906 Sherman  
Butte, MT 59701  
Telephone: 723-3132

Treasure State Ambulance Service

Larry Freyler  
1923 Phillips  
Butte, MT 59701  
Telephone: 792-5565



Liberty County Ambulance Service  
Dave Will  
Liberty County Hospital  
Chester, MT 59522  
Telephone: 334-2161

Blaine County Ambulance Service  
John Stephens  
Blaine County Courthouse  
Chinook, MT 59523  
Telephone: 357-2729

Choteau Ambulance  
Leon M. Gollehon  
Choteau, MT 59422  
Telephone: 466-2492

McCone Ambulance Association  
Dale Pawlowski  
Circle, MT 59215  
Telephone: 485-3405

Alhambra Emergency Vehicle  
W. L. Bompart  
Box 70  
Clancy, MT 59634  
Telephone: 933-5611

Anaconda Aluminum  
Paul McMaster  
Columbia Falls, MT 59912  
Telephone: 892-3261

Columbia Falls Volunteer Ambulance Asso.  
Bill Liddicoat  
Box 1  
Columbia Falls, MT 59912  
Telephone: 892-3281

Columbus J.C. Ambulance Service  
Dale Williams  
Box 802  
Columbus, MT 59019  
Telephone: 332-5251

Pondera County Ambulance  
Pat Wyse  
408 South Virginia  
Conrad, MT 59425  
Telephone: 278-3000

Culbertson City Ambulance  
Walter M. Sheldon  
Box 553  
Culbertson, MT 59218  
Telephone: 787-5264

Glacier County Ambulance Service  
Clarence Peterson  
Community Hospital  
Cut Bank, MT 59427  
Telephone: 938-2251

Darby Volunteer Fire Department  
and Ambulance Service  
Ron Barker  
Darby, MT 59829  
Telephone: 821-3697

Powell County Ambulance Service  
Ralph J. Beck  
Box 29  
Deer Lodge, MT 59722  
Telephone: 846-1777

Denton Volunteer Ambulance  
Bob Coffman  
Coffee Creek, MT 59424  
Telephone: 567-2449

Beaverhead Ambulance Company  
Billie A. Pace, Sec.  
P.O. Box 3  
Dillon, MT 59725  
Telephone: 683-4531

Drummond Ambulance Service  
Joe Rennie, Jr.  
P. O. Box 267  
Drummond, MT 59832  
Telephone: 288-3488

Dahl Memorial Hospital  
Margaret Castleberry, R.N.  
Ekalaka, MT 59324  
Telephone: 775-3111

Madison Valley Search/Rescue  
Edward Clark  
Ennis, MT 59729  
Telephone: 682-4286



Eureka Ambulance Service  
Don Lundeen  
Eureka, MT 59917  
Telephone: 296-2121

Town of Fairfield Ambulance  
Lee A. Shetler  
Box 8  
Fairfield, MT 59436  
Telephone: 467-2230

Rosebud County Ambulance  
Eno Kelm  
341 North Fourth  
Forsyth, MT 59327  
Telephone: 356-7636

Memorial Ambulance Service  
Joseph Jordan  
802 Front Street  
Fort Benton, MT 59442  
Telephone: 622-5131

Tom Rogers Ambulance Service  
Tom Rogers  
U.S. #2  
Glasgow, MT 59230  
Telephone: 228-2474

Glendive Ambulance Service  
James Leaf  
Glendive, MT 59330  
Telephone: 365-2361

Anaconda Co. Great Falls Reduction  
Al French - Bill Tiddy  
Box 151  
Great Falls, MT 59401

Bicsak & Sons Ambulance Service  
Charles Bicsak  
526 2nd Ave SW  
Great Falls, MT 59404  
Telephone: 452-4852

Ravalli County Ambulance Service  
Dale Dye  
County Courthouse  
Hamilton, MT 59840  
Telephone: 363-3033

Big Horn County Ambulance Service  
Norman Parrent  
Box 202  
Hardin, MT 59034

Morrison & Knudson Construction  
Bill Chapman  
P.O. Box 411  
Hardin, MT 59034  
Telephone: 665-2071

Wheatland County Ambulance  
Ward H. Beley  
Harlowton, MT 59036

Havre Fire Department  
Cortland Hilla  
420 Fifth Ave  
Havre, MT 59501  
Telephone: 265-6511

Ambulance Service of Helena  
Lloyd Linden  
314 N. Rodney  
Helena, MT 59601  
Telephone: 442-1234

Hobson Volunteer Fire Department  
Cloyd Gore  
Hobson, MT 59452

Joliet Ambulance Service  
Jay Spaulding  
Box 242  
Joliet, MT 59041  
Telephone: 962-3285

Garfield County Ambulance  
Lloyd Cox  
Garfield County Hospital  
Jordan, MT 59337  
Telephone: 435-4680

Kalispell City Ambulance  
Norman Peters  
Kalispell Fire Department  
Kalispell, MT 59901  
Telephone: 756-3638

Laurel Community Ambulance  
Rosemary J. Blohm  
310 Woodland  
Laurel, MT 59044  
Telephone: 698-8980

City of Lewistown Ambulance  
Tom Huff  
323 West Watson  
Lewistown, MT 59457  
Telephone: 538-3413





W. R. Grace & Co.  
Earl Louick  
P.O. Box 609  
Libby, MT 59923  
Telephone: 293-4131

Libby-Troy Volunteer Ambulance Service  
Mick Mills  
Box 228  
Libby, MT 59923  
Telephone: 293-4141

Stewart-Erickson  
M. S. McMillan  
P.O. Box 670  
Libby, MT 59923  
Telephone: 293-7451

Halverson, Mason Construction  
James Hamilton  
Box 770  
Libby, MT 59923  
Telephone: 293-2687

St. Regis Paper Company  
Mick Mills  
P.O. Box XV  
Libby, MT 59923  
Telephone: 293-4141

Lima Volunteer Ambulance Service  
Don Cheney  
Lima, MT 59739  
Telephone: 276-3523

Lincoln Volunteer Ambulance Service  
Lincoln Lions Club  
Lincoln, MT 59639  
Telephone: 362-9461

Franzen & Davis Ambulance Service  
Jack Davis  
118 North 3rd St.  
Livingston, MT 59047  
Telephone: 222-2911

Lowry Ambulance Service  
Cliff Halls  
302 South Main  
Livingston, MT 59047  
Telephone: 222-3515

Phillips County Ambulance Service  
Russell Cebulski  
Box 1093  
Malta, MT 59538  
Telephone: 654-1143

Miles City Ambulance Service  
Don Grauman  
City Hall  
Miles City, MT 59301  
Telephone: 232-2235

Arrow Ambulance Service  
Elmer Harriger  
Box 434  
Missoula, MT 59801  
Telephone: 549-2321

Hoerner-Waldorf Emergency Vehicle  
Jack Stratton  
Hoerner-Waldorf Paper Co.  
Drawer D  
Missoula, MT 59801  
Telephone: 543-6681

Community Ambulance Service  
Madge Post  
Noxon, MT 59854

Opportunity Volunteer Fire Dept.  
Ernie Strong  
R.F.D. 1  
Opportunity, MT 59711  
Telephone: 797-3746

Granite County Ambulance Service  
Bob Winninghoff  
Box 263  
Philipsburg, MT 59858  
Telephone: 859-3561

Plains Ambulance Service  
Clinton Sprindler  
P.O. Box 115  
Plains, MT 59859  
Telephone: 826-3966

Sheridan Ambulance Association  
Les Anderson  
Edgewood Motel  
Plentywood, MT 59254  
Telephone: 765-1270



- Polson Ambulance Service  
Lawrence Nobles  
Box 14, Rt. 1  
Polson, MT 59860  
Telephone: 833-4397
- Poplar Ambulance Service  
Florn Martin  
Box 4  
Poplar, MT 59255  
Telephone: 768-3365
- Red Lodge City Ambulance  
Joe Pendick  
1 South Platt  
Red Lodge, MT 59068  
Telephone: 446-1212
- Richey Volunteer Fire Department  
and Ambulance Service  
Leonard Dick  
Richey, MT 59159  
Telephone: 773-2047
- Ronan Ambulance Service  
Lester Madsen  
City Hall  
P.O. Box 594  
Ronan, MT 59864  
Telephone: 676-4235
- Musselshell County Ambulance  
Edwin Robinson  
Board of County Commissioners  
Roundup, MT 59072  
Telephone: 323-1404
- Rudyard Volunteer Ambulance  
Jerry Langel  
Rudyard, MT 59540  
Telephone: 355-2100
- St. Ignatius Ambulance Service  
Larry Gariepy  
St. Ignatius, MT 59865  
Telephone: 745-3123
- Daniels County Ambulance Service  
Tom Davis  
County Courthouse  
Scobey, MT 59263  
Telephone: 487-5561
- Seeley Lake Ambulance  
Kim Haines  
Seeley Lake, MT 59868  
Telephone: 677-2224
- Toole County Ambulance  
Bud Criner  
Box 343  
Shelby, MT 59474  
Telephone: 434-5505
- Sheridan Volunteer Ambulance  
James Corrigan  
Sheridan, MT 59749
- Richland County Ambulance  
Larry Nave  
Community Memorial Hospital  
Sidney, MT 59270  
Telephone: 482-3845
- Judith Basin County Ambulance  
Charles Loberg  
P.O. Box 130  
Stanford, MT 59479  
Telephone: 566-2538
- City of Sunburst Ambulance  
Paul Nichols  
Box 245  
Sunburst, MT 59482  
Telephone: 937-2161
- Superior Volunteer Ambulance  
John A. Anderson  
Box 325  
Superior, MT 59872  
Telephone: 822-4644
- Terry Ambulance Service  
Mrs. Emilia Trask  
Box 153  
Terry, MT 59349  
Telephone: 637-5553
- Thompson Falls Ambulance Service  
Robert Snider  
Box 248  
Thompson Falls, MT 59873  
Telephone: 827-3331



Broadwater County Ambulance Service  
Clint Holland  
Broadwater Hospital  
Townsend, MT 59644  
Telephone: 266-3411

Valier Ambulance Service  
Elmer Hotvedt  
Box 96  
Valier, MT 59486  
Telephone: 279-3223

Victor Volunteer Fire/Ambulance Dept.  
Larry Grimm  
Victor, MT 59875  
Telephone: 642-3362

West Yellowstone Ambulance Service  
Martin Smith  
Box 245  
West Yellowstone, MT 59758  
Telephone: 646-7713

Whitefish Volunteer Fire Department/  
Ambulance Service  
Lee Brockel  
619 Columbus  
Whitefish, MT 59937  
Telephone: 862-2668

Whitehall Ambulance Service  
Sherman Moore  
City of Whitehall  
Whitehall, MT 59759  
Telephone: 287-3555

Meagher County Ambulance Service  
Kenneth Twichel  
County Courthouse  
White Sulphur Springs, MT 59645  
Telephone: 547-3941

Wibaux Ambulance Service and  
Fire Department  
Donald Wilkowski  
Wibaux, MT 59353  
Telephone: 795-2621

Petroleum County Ambulance Services  
Jack Clark  
Winnett, MT 59353  
Telephone: 429-4501

Wisdom Volunteer Fire Department  
Frank Wilke  
Wisdom, MT 59761  
Telephone: 689-2544

Wolf Point Volunteer Ambulance  
Aldon Lee  
Trinity Hospital  
Wolf Point, MT 59201  
Telephone: 653-1956

Worden Ambulance Service  
Daniel Krum  
Worden, MT 59088  
Telephone: 967-3612





AIR AMBULANCE SERVICES

<u>City</u>	<u>Operators</u>	<u>Type of Craft</u>
Baker	Bethel Aviation	Skylane C-182
Billings	Gillis Aviation	Seneca - AMEL <sup>1</sup> *
	Lynch Flying Service	(4) Cessna 310 - AMEL Cessna 402 - AMEL Cessna 414 - AMEL
Butte	Butte Aero	Cessna 206*
Belgrade	Flight Line, Inc.	Cessna 172 Cessna 206* Cessna 310 - AMEL
Choteau	Flying A Sprayers	Cessna 337 - AMEL
Conrad	Minuteman Aviation, Inc.	Cessna 206*
	Pondera Flying Service, Inc.	Beech V35 Cessna 336 - AMEL
Dillon	Dillon Flying Service	Cessna 172 Cessna 182
Glendive	Glendive Flying Service	Skyhawk 172
Glasgow	Wohal Flying Service	Cessna 210 Cessna 182
Great Falls	Northern Aviation, Inc.	Piper PA-31 - AMEL
	Northwest Mooney Sales, Inc.	Mooney M20
	Holman Aviation Co.	Cessna 310
	Skymart Aviation, Inc.	Cessna 182 Mooney M20E Beech A55 - AMEL
Hamilton	Hamilton Aircraft	Cessna 206*
Havre	Hensley Flying Service	Piper PA-24-260

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<sup>1</sup>Multiple Engine Aircraft

\*Indicates aircraft meets suggested minimum dimensions. A serious deficiency of many aircraft, which do not meet suggested minimum dimensions, is inadequate door space. The restricted door space will not allow the safe and comfortable entry and exit of a patient on a stretcher.



<u>City</u>	<u>Operators</u>	<u>Type of Craft</u>
Helena	Morrison Flying Service, Inc.	Cessna 206*
Kalispell	Holman Aviation Co.	Cessna 182
	Strand Aviation, Inc.	Cessna 206*
	Stockhill Aviation, Inc.	Cessna 182
		Cessna 206*
Lewistown	Central Air Service	Piper Commanche
	Skycraft	Cherokee 180
		Cherokee Arrow
		Cessna 210
Livingston	Michel's Flying Service	Piper PA-28-300
Malta	Mendel Flying Service	Cessna 185
	Russ Aero	Cessna 172
Missoula	Johnson Flying Service, Inc.	Cessna 206*
		Cessna 411 - AMEL
		Beech E18 - AMEL
		Bell Jet Ranger
Plentywood	Executive Aviation, Inc.	Cessna 182
		Piper PA-23 - AMEL
		Cherokee 6
Polson	Timm Aero Service	Cessna 210
Miles City	Miles City Aero	Bonanza Beech 35
Roundup	Albright Flying Service	Cessna 185
Sidney	Richland Aviation	Piper Cherokee PA-28
		Super 21 Mooney



DISTRIBUTION OF HELICOPTERS

<u>Operators</u>	<u>Type of Craft</u>
Central Air Service, Inc. P. O. Box 895 Lewistown, MT 59457	2 Bell 47G3B1
Hoffmann's Custom Flight Service Billings, MT 59101	1 Hughes 300
Johnson Flying Service, Inc. P. O. Box 1366 Missoula, MT 59801 Jack R. Hughes, Chief Pilot Telephone: 549-4158	1 Bell 47G3B 5 Bell 47G3B1 1 Bell Super G 2 Bell Jet Ranger
Kruger Flying Service Municipal Airport Cut Bank, MT 59427 Telephone: 938-2147	1 Bell 47G3 1 Bell 47G3B1
Laurel Helicopter Sales Box 238 Laurel, MT 59044 Dr. Raymond L. Turcotte, President Telephone: 698-6722	1 Hughes 269A
Missoula Skyflite, Inc. Box 540 Missoula, MT 59801 Robert J. Lueck, President Telephone: 543-8334	1 Hughes 300
Sky Harbor Enterprises, Inc. P. O. Box 400 Billings, MT 59103 Frank C. Hoffman, Jr., President Phone: 245-6421	3 Hughes 300 2 Hughes 269A
Yellowstone Skyways, Inc. P.O. Box 491 Livingston, MT 59047 Telephone: 222-0298	1 Bell 47G3B1





TABLE 3

## TRANSPORTATION INFORMATION

Type of Service	Number Surveyed	Number Personnel	Number Vehicles
Commercial*	16	115	30
Hospital	3	33	4
Volunteer	39	384	42
Government	36	357	47
Industry	8	65	9
TOTAL	102	954	132

\*Includes funeral homes.

TABLE 4

## STAFFING OF AMBULANCE SERVICES

Type of Service	Number
Primarily city/county volunteers	70
Private	15
Private Industry	10
City - operated by fire or police	6
American National Red Cross	1
TOTAL	102



TABLE 5  
TOTAL EMERGENCY RUNS

Type of Service	Number Surveyed	Number Runs
Commercial	9	1859
Hospital	5	164
Voluntary	16	791
Government	24	2267
Industry	8	102
TOTAL	62	5183

TABLE 6  
EMERGENCY TRANSFERS OUTSIDE THE USUAL OPERATIONAL AREA

Type of Service	Number Surveyed	Number Emergency Transfers	Total Emergency Runs	Emergency Transfers
Commercial	9	197	1859	10.6%
Volunteer	16	91	791	11.5%
Government	24	352	2267	14.7%
Industry	8	2	102	1.9%
Hospital	5	26	164	15.8%
TOTAL	62	668	5183	12.8%



TABLE 7  
EMERGENCY RUNS BY TYPE OF SERVICE

Type of Service and Number Surveyed						
Month	Commercial 4	Volunteer 5	Government 11	Industry 4	Hospital 2	Total
Jan	61	39	115	4	12	231
Feb	58	43	84	4	7	196
Mar	69	48	111	6	9	243
Apr	68	57	125	5	11	266
May	73	59	138	3	16	289
June	66	60	147	7	17	297
July	90	57	126	9	7	289
Aug	61	45	161	11	15	293
Sept	63	63	131	5	12	274
Oct	54	27	44	1	3	129
TOTAL	663	498	1182	55	109	2507

TABLE 8  
SERVICES CARRYING SPECIALIZED EQUIPMENT

Type of Equipment	Number of Services	Percent
IV Agents	7	6.9%
Blood Pressure Equipment	29	28.4%
OB Kits	23	22.5%
Air Splints	88	86.3%





TABLE 9  
ECONOMICS BY TYPE OF SERVICE

Type of Service	Number Surveyed	Service Charge		Profit		
		Yes	No	Yes	No	
Commercial	16	16	0	11	4	1 Unknown
Volunteer	38	32	7	20	15	3 Unknown
Government	35	33	2	20	15	
Industry	8	0	8	na	na	
Hospital	3	3	0	2	1	
TOTAL	100	84	17	53	35	4

TABLE 10  
SUBSIDIZATION BY TYPE OF SERVICE

Type of Service	Number Surveyed	Yes	No
Commercial	16	6	10
Volunteer	37	5	32
Government	35	17	18
Industry	8	0	8
Hospital	3	1	2
TOTAL	99	29	70



TABLE 11

## HOSPITAL NOTIFICATION PRIOR TO ARRIVAL

Type of Service	Number Surveyed	Yes	No	How Notified	Phone	Radio	Comb.
Commercial	9	9	0		6	6	
Volunteer	16	13	3		9	3	
Government	25	22	3		19	6	
Industry	8	8	0		8		
Hospital	5	5	0		3	2	
TOTAL	63	57	6		45	17	

TABLE 12

## ESTIMATED PERCENT OF EMERGENCY RUNS\*

Type of Service	Number Surveyed	Number Emergency Runs	Estimated % of Total Runs
Commercial	9	1859	37%
Government	24	2267	64%
Volunteer	16	791	88%

\*The total for all ambulance runs had to be extrapolated from data provided by the EMS Ambulance Licensing Staff, Montana State Department of Health and Environmental Sciences, for 1972.

TABLE 13

## SERVICES CARRYING SPECIALIZED EQUIPMENT

Equipment	Number of Services	Percent
IV Agents	7	6.9%
Blood Pressure Equipment	29	28.4%
OB Kits	23	22.5%
Air Splints	88	86.3%



TABLE 14

## HIGHWAY ACCIDENTS BY AM OR PM - 1972

Time	All Primary Routes		County Roads		Local Street		Totals	
	Fatal	Total Accident	Fatal	Total	Fatal	Total	Fatal	Total
AM	90	3526	9	630	6	1417	105	5573
PM	164	6312	27	1254	14	2907	205	10473
Not Stated	1	113	2	40	0	63	3	216
TOTAL	255	9951	38	1924	20	4387	313	16262

TABLE 15

## HIGHWAY ACCIDENTS BY DAY OF WEEK

Day	Fatal	Total Accidents
Saturday	77	2989
Sunday	59	2513
Monday	41	2104
Tuesday	35	1950
Wednesday	19	1924
Thursday	42	2092
Friday	40	2690
TOTAL	313	16262





AMBULANCE EQUIPMENTSUGGESTED EXTRICATION EQUIPMENT<sup>1</sup>

In many instances, ambulance services are involved in the extrication of trapped emergency victims because a rescue unit or wrecker is not immediately available. The following list consists of light rescue equipment which can be stored in most ambulances. Ambulance attendants should be adequately trained in light rescue procedures. The list provides for lifting, prying, battering, and cutting tools.

1. Jacks (preferably a porta-jack and hydraulic jack);
2. Crowbars, 51" pinch point, and wrecking bar 24";
3. Cutting Tools (wire cutters, tin snips, hacksaw);
4. Rope (50' by 7/8", 50' by 1/2");
5. Protective Gear (gloves, eye glasses).

Whenever possible, extrication equipment should be stored outside of the patient compartment

RESUSCITATION EQUIPMENT

Artificial ventilation devices should be hand operated, portable and independent of a supply of oxygen. The recommended self-refilling bag-valve-mask unit permits proper timing of long inflations and assessment and correction of ventilation volumes, airway obstruction, mask leak and accidental inflation of the stomach. Although independent of compressed oxygen, the bag-valve-mask unit should permit delivery of 100% oxygen during spontaneous and artificial ventilation. In addition, the unit should have a standard universal adapter (15 mm tracheal tube/22 mm mask), a reliable non-rebreathing valve, and transparent masks in sizes for adults, children, and infants; to allow the attendant to observe the patient's color, occurrence of vomiting and breathing (clouding during exhalation).

Oropharyngeal airways for adults, children and infants should be carried. Airways and masks for mouth-to-mouth ventilation in all sizes should also be provided. All airways should be the disposable plastic type.

Oxygen Delivery Equipment

There should be two oxygen supplies, one portable, the other installed.

The portable unit of 300-liter capacity located near a door for ready use outside should be equipped with a yoke, pressure gauge, flowmeter (not gravity dependent), delivery tube, and oxygen mask. The unit should be

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<sup>1</sup>This list was compiled from: Commission on EMS, American Medical Association, Emergency Medicine Today, Vol. 1, No. 7, September, 1972.



capable of delivering an oxygen flow of at least 10 liters/min. An extra 300-liter capacity cylinder should be available.

The installed unit is supplied by at least 3000 liters of oxygen contained in two tanks and delivered by a two-stage regulator under 50 psi. There should be yokes, reducing valves, flowmeters (not gravity dependent), humidifiers with sterile water and unbreakable bottles, delivery tubes, and oxygen masks for two patients. Oxygen pressure gauge and flowmeters, humidifiers, and delivery tubes should be visible and accessible to the attendant seated at the head of the litter. Delivery tubes should reach to the face of patients transported in the horizontal position and deliver a continuous flow of at least 10 liters/min. and should connect readily to oxygen masks and the bag-valve-mask ventilation unit.

Oxygen masks (with or without bags) should be semi-open; valveless; transparent; disposable, or easy to clean and decontaminate; and in sizes for adults, children, and infants.

### Suction Equipment

**Portable.** This unit should provide vacuum and flow adequate for removal of thick pharyngeal secretions. It should be fitted with large-bore, non-kinking suction tubing and a rigid pharyngeal suction tip. Additional suction equipment that should be carried are: sterile suction catheters of various sizes for suctioning via tracheal tube; nonbreakable collection bottle; and a water supply for flushing tubes.

**Installed.** This unit should provide an airflow of over 30 liters/min. at the end of the delivery tube, a vacuum of over 300 mm Hg when the tube is clamped and a reduction of both for tracheal suction. There should be an additional set of rigid pharyngeal suction tips (tonsil suction tips) and sterile tracheal suction catheters of various sizes. For tracheal suction, a Y- or T-piece, or a lateral opening should be between the suction tube and suction source for on-off control. The suction yoke, collection bottle, water for rinsing, and suction tube should be readily accessible to the attendant at the head of the litter and the tube should reach the airways of patients regardless of their position. Suction apparatus must be easily cleaned and decontaminated.

### EXTERNAL CARDIAC COMPRESSION

A backboard should be readily available and, when placed under the patient in bed or on a litter, provide the necessary resistance for effective external cardiac compression and raise the patient's shoulders 3-4 inches above the level of the litter in order to keep his head in a position of maximal backward tilt, and in a straight position without manual support. This may help maintain an open airway during cardio-pulmonary resuscitation by one operator during transportation. A special backboard may be used, or the long or short spinal-fracture board supplemented with a tightly rolled sheet under the patient's shoulders and a head stabilizer, such as a doughnut-shape rest or sandbags.





FRACTURE IMMOBILIZATION

The following supplies must be carried for immobilization of fractures or suspected fractures:

1. A hinged, half-ring lower extremity splint with a minimum ring size of 9 inches and minimum overall length of 43 inches, and with padded ankle-hitch or skin-traction device, with either a built-in turnbuckle device or a supplemental "Spanish windlass" device.
2. Splints for the upper and lower extremities, such as padded boards, of material comparable with four-ply wood in widths of 3 inches and lengths of 15, 36, and 54 inches; cardboard, plastic, wire ladder, canvas-slotted lace-on and inflatable types; the number and types of splints to be determined by local experience in the area served.
3. Triangular bandages for fractures of the shoulder and upper arm.
4. Short and long spineboards and accessories for safe extrication, as well as immobilization in case of actual or suspected injuries of the spine.

WOUND DRESSING

Supplies to be carried for dressing of open wounds and for padding and application of splints include:

1. Sterile gauze pads of conventional sizes for covering wounds.
2. Multiple-width 5-yard soft roller and elastic bandages (soft roller preferred) for application of large dressings, for securing of pressure dressings for control of hemorrhage,<sup>2</sup> and for securing traction or coaptation splints.
3. Sterile, nonporous dressings for occlusion of sucking wounds of the chest.
4. Universal dressings, approximately 10 inches by 36 inches, packaged folded to 10 inches by 9 inches, for covering large wounds, including burns; and for compression, padding of splints, or application as a cervical collar.
5. Adhesive tape--1, 2, and 3 inches.
6. Safety pins--large.
7. Bandage shears.

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<sup>2</sup>Application of pressure dressings is the procedure of choice for control of hemorrhage, except for inaccessible sites, where direct digital pressure may be life saving. Inflatable splints have proved effective for hemorrhage below the elbow or knee. If carrying of tourniquets is elected, strict limitations in their use must be imposed.





## PREVENTION AND TREATMENT OF SHOCK

Equipment should include sterile intravenous agents, preferably in plastic bags, such as isotonic saline solution, 5% dextrose in lactated Ringer's solution, 5% albumin, or dextran; and sterile, disposable intravenous administration sets and injection kits (needles, catheter needles, syringes, antiseptic sponges, venous tourniquet, tape).

## EMERGENCY CHILDBIRTH AND TRANSPORTATION OF INFANTS

In addition to sterile dressings and towels, a sterile kit containing gloves, scissors, and umbilical clamps or umbilical tape should be carried.

Each ambulance service should have available immediately from hospitals or other sources a portable incubator that can be secured on the litter for transporting newborn infants. The incubator should permit oxygen enrichment, humidification, control of body temperature, and accessibility of the baby's head for resuscitation. There should be artificial ventilation and sterile tracheal-intubation equipment in appropriate sizes for this purpose.

## ACUTE POISONING

Activated charcoal and syrup of ipecac should be provided, as well as portable water and equipment for oral administration and for irrigation of the conjunctiva and skin. Snakebite kits should be carried in areas where the hazard of snakebite exists.

## PHYSICIAN EQUIPMENT

Space in the ambulance should be provided for additional equipment that would be used by a physician or registered nurse. Such equipment should consist of kits and disposable items.

In locations where ambulance services operate closely with hospitals and physicians, a locked physician's bag should be carried at all times in the vehicle. That bag would include at least the following items: intravenous fluids, endotracheal tubes, tracheostomy set, chest tube with a flutter valve, catheters, naso-gastric tube, and intravenous needles and catheters.

All equipment in the vehicle should be grouped separately and be identified by label and color code.



EQUIPMENT FOR TRANSFER OF HIGH-RISK INFANTS

1. The means to easily latch objects, including incubator, oxygen tanks and other equipment to the floor or walls, should be provided. This could be done by chains, latches, or other mechanisms.
2. Noise and vibration should be kept at a minimum.
3. Temperature: an approximate temperature of 82°F in the air and on the inner walls of patient compartment should be maintained. If the door is opened, the heating system should be capable of restoring optimum temperature within a few minutes.
4. Lighting: general illumination should be maintained with the ability to provide more intense light (100 candle power or more).
5. Electrical: outlets should be located to accommodate an incubator and other necessary electrical appliances. Plug style should be the same as in a hospital nursery, or appropriate adapters carried.

Each outlet should be marked with voltage supplied, current rating in amperes, nature of current (AC, DC) and frequency in Hz or cycles/second.

Provisions should be made for adequate separation of circuitry so that power interruption (fuse or circuit breaker action) will allow remaining outlets to be used.

Power consumption of incubator and associated equipment can be as high as 400 watts or 4 amperes at 110 volts. The power plant of the ambulance may be inadequate either in quality of current or in total capacity. When current capacity is inadequate, the driver may have to eliminate the use of some electrical equipment, i.e., a siren.

All attendants should be familiar with requirements and capabilities of electrical circuits.

Excessive current flow can produce a complete power failure during transport. Spare fuses and proper selection of current requirements should be considered.



TRANSPORT INCUBATORS

The following information describes desirable features of an incubator:

1. It should have sturdy and comfortable carrying handles which are well above the center of gravity, whether or not it is loaded with the patient and equipment.
2. There should be some convenient lashing loops or other hardware to maintain a safe and stable position in transit, whether by ground or air.
3. There should be space in the incubator for the infant to lie comfortably and with sufficient margin for the accommodation and handling of catheters and other equipment that may be attached to him. A desirable inside height above mattress level has been estimated at 15 inches above the mattress.
4. There should be some method of protecting the infant from sliding within the incubator without rigidly immobilizing all limb movement.
5. The lighting conditions should be self-contained and provide enough general illumination of the infant as well as localized brighter light for procedures.
6. It should be possible to maintain an adequate humidity (50-60%).
7. The lid should have a positive locking device so that it will not spring open inadvertently. However, there should be a simple, quick release.
8. The air intake should be such that the finest of road dust will not be admitted.
9. There should be a minimum of time required for preheating the incubator before admission of the infant, and a very rapid recovery of temperature whenever the lid is lifted to place the baby in it.
10. Controls of temperature and oxygen flow should be readily accessible, and free from any predisposition to inadvertent change during conditions of transportation. There should be a foolproof alarm system to signal any overheating, underheating, or power failure.
11. The interior color should be sufficiently neutral so that important skin changes to a cyanotic or gray color will be detected.
12. Certain accessories should be easily fixed to the incubator so that there will be no danger of their disruption when it is carried. These include an infusion pump and other appropriate intravenous tubing, an infant ventilator if it is being used, a suction system, and an oxygen tank with sufficient capacity for the period when the incubator is not fixed in the ambulance.





13. There should be immediate control of oxygen concentrations to over 90 percent. There should be an alternate system to provide for the use of a ventilator or face mask on short notice without interrupting the general oxygen supply to the incubator.

14. To avoid the hazard of inadequate decontamination between patients, some of whom may be highly infectious, disposable supplies should be used wherever possible and an attempt made to convert all surfaces and objects to the disposable approach.

15. There should be a good selection of apertures, not only for access by hand, but for the passage of electronic leads, intravenous and suction tubing, ventilator tubing, the fixation of tubes, the insertion of a breathing bag, or of monitoring and other equipment.

16. Because some ambulance power supplies may not provide a suitable wave form of alternating current, it would be most desirable for incubators to be operable on a direct current or on an alternating current which does not have a critical requirement for wave form. Critical wave form requirements present an added challenge in any attempt to use solid state circuitry, e.g., for servo control.

17. The various features of guaranteeing visibility, thermal protection and access should be absolutely fundamental.

18. Different units of monitoring equipment may or may not be a part of the unit. It is preferable for them to operate independently. Heart rate monitoring is now possible using a unit with an internal battery supply. Ambient or inhaled oxygen concentration can be measured without any electrical source, other than its own fuel cell. If monitors require an external power source, the electrical distribution system must be both simple and versatile. The newly developing understanding of ventricular fibrillation as the result of microampere current electrocution requires a review of every existing and improvised electrical arrangement.

19. It is recommended that the ground ambulance accommodating an incubator should have inside dimensions of 170 x 280 cm. with a height of 180 cm. (69 x 112 x 60 inches) available for the incubator and the required working space.



### INCUBATOR AIR TEMPERATURES

Recommended for use as an initial guide when relative humidity is approximately 50%. A lower humidity would require higher temperatures. Various other factors in the thermal environment and the individual infant's requirements will justify a temperature which is higher or lower than the following.

TABLE 16

FIRST 24 HOURS

Birth Weight			Temperatures (median $\pm$ range)		
Gm.	Lb.	Oz.	$^{\circ}\text{C.}$		$^{\circ}\text{F.}$
500	1'	0"	35.5 "	$\pm$ 0.5 "	96.0 " $\pm$ 0.9
1000	2'	0"	35.0	"	95.0 "
			34.9	"	94.9 "
1500	3'	0"	34.2	"	93.6 "
			34.0	"	93.2 "
2000	4'	0"	33.7	"	92.7 "
			33.5	"	92.3 "
2500	5'	0"	33.3	0.7	92.0 1.3
			33.2	0.8	91.8 1.4
3000	6'	0"	33.1	0.9	91.6 1.6
			33.0	1.0	91.4 1.8
3500	7'	0"	32.9	1.1	91.2 1.9
			32.8	1.2	91.0 2.1
4000	8'	0"	"	1.3	" 2.3
			32.6	1.4	90.7 2.5
	9'	0"	32.5	"	90.5 "



TABLE 17

VOLUME AND FLOW DURATION OF OXYGEN IN  
TWO SIZES OF CYLINDERS

Reading on Cylinder Pressure Gauge									
	Full		3/4-Full		1/2-Full		1/4-Full		
Pressure (lbs./sq. in.)	244		183		122		61		
Cylinder Type	E	H	E	H	E	H	E	H	
Contents (cu. ft.)	22	244	16.5	183	11	122	5.5	61	
(litres)	622	6900	466	5175	311	3450	155	1725	

TABLE 18

## APPROXIMATE NUMBER OF HOURS OF FLOW

	Full		3/4-Full		1/2-Full		1/4-Full		
Cylinder Type	E	H	E	H	E	H	E	H	
Flow Rate (Litres/min.)									
2	5.1		3.8		2.5		1.3		
		56		42		28		14	
4	2.5		1.8		1.2		0.6		
		28		21		14		7	
6	1.7		1.3		0.9		0.4		
		18.5		13.7		9.2		4.5	
8	1.2		0.9		0.6		0.3		
		14		10.5		7		3.5	
10	1.0		0.7		0.5		0.2		
		11		8.2		5.5		2.7	
12	0.8		0.6		0.4		0.2		
		9.2		6.7		4.5		2.2	
15	0.6		0.4		0.3		0.1		
		7.2		5.5		3.5		1.7	



TABLE 19  
TEMPERATURES ACCORDING TO AGE  
Temperatures (Median  $\pm$  Range)

Birth Weight	Under 1500 Gm. (3 lb. 5 oz.)	1501-2500 Gm. (3 lb. 6 oz.- 5 lb. 8 oz.)	Over 36 Weeks Gestation and over 2500 Gm. (5 lb. 8 oz.)			
AGE (Day)	$^{\circ}\text{C}$	$^{\circ}\text{F}$	$^{\circ}\text{C}$	$^{\circ}\text{F}$		
1st	34.3 + 0.4	93.8 + 0.7	33.4 + 0.6	92.1 + 1.1	33.0 + 1.0	91.4 + 1.8
2nd	33.7 - 0.5	92.7 - 0.5	32.7 - 0.9	90.9 - 1.6	32.4 - 1.3	90.4 - 2.3
3rd	33.5	92.3	32.4	90.4	31.9	89.4
4th	"	"	32.3	90.2	31.5	"
6th	"	"	32.1	89.8	30.9	87.6
8th	"	"	"	"	30.6	87.0
10th	"	"	"	"	30.2	86.4
12th	"	"	"	"	29.5	85.1
14th	33.4	92.1	"	"	1.6	2.8
(Week)						
4th	32.9	91.2	31.7	89.0		
5th	32.1	89.8	31.1	87.9		
6th	31.8	89.2	30.6	87.1		
7th	31.1	87.9	30.1	86.2		





TABLE 20  
EFFECTS OF ALTITUDE ON AMBIENT, ALVEOLAR AND ADULT ARTERIAL  
PARAMETERS AND ON EXPANSION OF ENCLOSED GAS

Altitude (Feet)	Atmos- pheric Pressure (lbs/sq. in.)	Expansion Factor of Trapped Gas	Partial Pressure of Oxygen mm.Hg.	Alveolar mm.Hg.	Arterial Oxygen Saturation*	Simulated Altitude from Cabin Pressurization** (Feet)
SL	14.70		159	101-105	96-97%	
5,000	12.20			75-82	91-95%	
7,500	11.20					
10,000	10.11	X1.5	106	55-65	85-92%	200 (C)
15,000	8.30			32-60	63-90%	2,000 (C)
18,000		X2	79			6,000 (C)
20,000	6.75			45	80%	9,700 (C)
22,500	6.10					4,930-5,000 (DV)
25,000	5.46					6,500 (DV)
27,000		X3			75%	
30,000				24	47%	1,750-1,800 (DV)
33,400		X4				5,400 (LE)
35,000	3.40			14	25%	8,000 (LE)
38,500		X5				
40,000	2.72			11	15%	
						5000-5500 (J)
						7000-7500 (J)

\* As measured in normal adults breathing ambient air. Expectations would be lower in sick infants.  
C Convair aircraft.

DV Douglas DC-3 and Vickers Viscount.

LE Lockheed Electra.

J Jet aircraft: Boeing 707 and Douglas DC-3.

\*\* As specified, but wide divergence found on actual performance measurements.



AMBULANCE DESIGNDesirable Criteria

1. Standard design - to keep cost reasonable.
2. Standard color - for easy recognition.
3. Standard rotating beacon - for easy recognition.
4. High speed not essential.
5. Good riding qualities - to prevent further injury during transport.
6. Good road clearance.
7. Well insulated - both for noise and outside weather.
8. Easily cleaned.
9. Fire, water, and chemical resistant lining.
10. Safe inside design - to prevent further injury to the patient or attendant.
11. Well illuminated - to allow for life support activities at emergency site and during transit.
12. Adequate electrical system.
13. Protected windows - to prevent breakage and provide privacy.
14. Built in oxygen and suction - for life support.
15. Carry two litters.
16. Partition between driver and patient compartment - for protection of driver and vehicle with unruly patient. Also, to keep light from patient compartment from reflecting on windshield.
17. Adequate head room - to allow patient care en route.
18. Adequate equipment.
19. Excellent communications.

An ambulance is defined as a vehicle for emergency care which provides a driver compartment and a patient compartment to accommodate two emergency medical technicians and two litter patients so positioned that at least one patient can be given intensive life-support during transit. It is defined, also, as a vehicle which carries equipment and supplies for optimal emergency care outside the vehicle and during transport, for two-way radio communications, for safeguarding personnel and patients under hazardous conditions, and for light rescue procedures. And it is further defined as a vehicle designed and constructed to afford maximum safety and comfort for the patient, and to avoid aggravation of the patients' condition, exposure to complications, or any other threat to survival.

Electrical System

1. Adequate for 12 volt requirements.
2. Suggest further requirement for 120 volts - to allow for adequate current for moving flood lights away from vehicle. Also, provide power source for other items.
3. All electrical circuits in vehicle to be equipped with automatic circuit breakers to avoid blown fuses.



### Ambulance Markings

1. White for visibility at night - the basic color for a vehicle.
2. Omaha Orange for visibility during day - for trim and insignia.
3. The word AMBULANCE lettered in black.

### Interior Dimensions

Because the entire purpose of the ambulance is to provide emergency care and transportation for the patient, the patient compartment is vital. The usual litter is 76 inches long. A minimum of 25 inches at the head, to allow for life-support activities, and 15 inches at the foot, to allow for extension of splints over the end of the litter, have been requested. The width of the compartments will depend upon the placement of the litters; however, it must be wide enough to provide space for the technician to perform external cardiac compression on a patient when he is in a right-angle kneeling position at the side of the patient. Minimum height of the patient compartment is to be 54 inches, with 60 inches desirable. This will allow for the giving of external cardiac compression when the patient is on the litter or on the floor.

Access to the patient compartment, as it relates to patient care, is important; as are the design requirements of the bulkhead, air conditioning system, and heating unit. Space should be provided for basic medical equipment and for the basic light rescue equipment which should be on any ambulance when it is not immediately available from other sources. The vehicle will also carry basic equipment to secure the area of the accident, and to prevent further crash injury. The entire system should be designed to meet, or even exceed, federal motor vehicle safety standards.

An ambulance exists solely to provide emergency care at the scene of an accident and during transport to the hospital. For this reason, the medical criteria must dictate its design and construction.





## AMBULANCE SURVEY

1. How many EMERGENCY\* runs did your ambulance(s) make by month in 1972? January, February, March, April, May, June, July, August, September, and October. Number \_\_\_\_\_.
2. How many EMERGENCY runs did you make last year where long distance transfer to a major medical facility outside of your usual operational area was required? Number \_\_\_\_\_.
3. Is the request for ambulance received at your facility by means of:
  - a. Regular telephone? ( )
  - b. Telephone "hot-line", i.e. 911? ( )
  - c. Radio? ( )
  - d. Other (specify) ( )
4. Is the hospital routinely notified by your organization in advance that a serious EMERGENCY case is enroute to its emergency department?  
 Yes \_\_\_\_\_ No \_\_\_\_\_  
 How notified? Telephone \_\_\_\_\_ Radio \_\_\_\_\_ Other \_\_\_\_\_
5. In a serious EMERGENCY situation, to which hospital do you deliver the patient?
  - a. Only one in community? ( )
  - b. Nearest one to accident? ( )
  - c. As directed by physician after consultation by radio? ( )
  - d. As determined by ambulance personnel? ( )
  - e. Other (specify) ( )
6. How do you handle requests for EMERGENCY ambulance service at a time when you do not have any ambulances available?
  - a. Use other types of vehicles? ( )
  - b. Delay run until an EMERGENCY vehicle is available? ( )
  - c. Give request to another ambulance service? ( )
  - d. Deny service, stating unavailability? ( )
  - e. Other (specify) ( )
7. In recent years has any emergency arisen in which your communications systems, either telephone or radio, were overloaded? Yes \_\_\_\_\_ No \_\_\_\_\_
  - a. Or unusable due to external conditions? Yes \_\_\_\_\_ No \_\_\_\_\_
  - b. If YES, please describe events and circumstances.
8. How many times per year is it necessary to correct dispatch information previously given to the ambulance, i.e., incorrect addresses, etc.? \_\_\_\_\_

\*For the purpose of this survey, an emergency is any condition that requires immediate medical attention.



TRIP REPORT FORM

AMBULANCE SERVICE \_\_\_\_\_ LENGTH OF RUN (MILES) \_\_\_\_\_  
 PATIENT'S NAME \_\_\_\_\_ AGE \_\_\_\_\_ DATE \_\_\_\_\_  
 ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ PHONE \_\_\_\_\_  
 NAME OF HOSPITAL \_\_\_\_\_ ADDRESS \_\_\_\_\_

TIME FACTOR	AM	PM	TYPE OF INJURY OR INCIDENT	TYPE OF RUN
Onset of emergency	_____	_____	(e.g., boating, assault, fall,	Emergency run ( )
Call received	_____	_____	suicide, etc.) _____	Dry run ( )
Arrive scene	_____	_____	_____	Routine transfer ( )
Arrive E.R.	_____	_____	_____	

VEHICLE ACCIDENT	INJURY	SYMPTOMS PRESENT IF ILLNESS	
Driver ( )	Head ( )	Abdominal pain ( )	Poison-Drugs (Describe) ( )
Front Seat Pass. ( )	Neck ( )	Convulsions (Describe) ( )	Poison-Other (Describe) ( )
Back Seat Pass. ( )	Back ( )	Diabetic coma ( )	Shock ( )
Motorcyclist ( )	Chest ( )	Difficulty breathing ( )	Vomiting ( )
Bicyclist ( )	Abdomen ( )	Dizziness-weakness ( )	Impairment similar to
Pedestrian ( )	Pelvis ( )	Stomach problems ( )	that caused by alcohol ( )
	Extremity ( )	Hemorrhaging (Describe) ( )	Descriptions: _____
	Multiple ( )	Paralysis ( )	_____

VICTIM STATUS	VITAL SIGNS	FIRST AID PROVIDED	
Sex: M ( ) F ( )	Rate Time Rate Time		Before Crew
Conscious ( )	Pulse _____	By Crew	Arrived
Semiconscious ( )	Respiration _____	Removal from vehicle ( )	( )
Unconscious ( )	Blood Pressure _____	Clear airway ( )	( )
Conscious ( )		Artificial resp. ( )	( )
Hemorrhaging ( )	PUPILS	Control bleeding ( )	( )
Vomiting ( )	Equal ( )	Neck immobilization ( )	( )
Apparent death	Unequal ( )	Spine immobilization ( )	( )
at scene ( )	Dilated ( )	Limb splints ( )	( )
	Constricted ( )	Cardiac massage ( )	( )
	Do not react to light ( )	O.B. delivery ( )	( )
		Bandaging ( )	( )
		Anti-shock ( )	( )
		Administer oxygen ( )	( )
		Poison antidote ( )	( )
		Other (Specify): _____	

AMBULANCE PERSONNEL RELEASED BY \_\_\_\_\_  
 Signature

TIME: \_\_\_\_\_ AM \_\_\_\_\_ PM

DO NOT WRITE  
 IN THIS SPACE



## TRIP REPORT FORM

AMBULANCE SERVICE \_\_\_\_\_ LENGTH OF RUN (MILES) \_\_\_\_\_  
 PATIENT'S NAME \_\_\_\_\_ AGE \_\_\_\_\_ DATE \_\_\_\_\_  
 ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ PHONE \_\_\_\_\_  
 NAME OF HOSPITAL \_\_\_\_\_ ADDRESS \_\_\_\_\_

TIME FACTOR	AM	PM	TYPE OF INJURY OR INCIDENT	TYPE OF RUN
Onset of emergency	_____	_____	(e.g., boating, assault, fall, suicide, etc.) _____	Emergency run ( )
Call received	_____	_____	_____	Dry run ( )
Arrive scene	_____	_____	_____	Routine transfer ( )
Arrive E.R.	_____	_____	_____	

IF VEHICLE ACCIDENT	INJURY	SYMPTOMS PRESENT IF ILLNESS	
Driver ( )	Head ( )	Abdominal pain ( )	Poison-Drugs (Describe) ( )
Front Seat Pass. ( )	Neck ( )	Convulsions (Describe) ( )	Poison-Other (Describe) ( )
Back Seat Pass. ( )	Back ( )	Diabetic coma ( )	Shock ( )
Motorcyclist ( )	Chest ( )	Difficulty breathing ( )	Vomiting ( )
Bicyclist ( )	Abdomen ( )	Dizziness-weakness ( )	Impairment similar to
Pedestrian ( )	Pelvis ( )	Stomach problems ( )	that caused by alcohol ( )
	Extremity ( )	Hemorrhaging (Describe) ( )	Descriptions: _____
	Multiple ( )	Paralysis ( )	_____

VICTIM STATUS	VITAL SIGNS	FIRST AID PROVIDED	
Sex: M( ) F( )	Rate Time Rate Time		Before Crew
Conscious ( )	Pulse _____	By Crew	Arrived
Semiconscious ( )	Respiration _____	Removal from vehicle ( )	( )
Unconscious ( )	Blood Pressure _____	Clear airway ( )	( )
Convulsing ( )		Artificial resp. ( )	( )
Hemorrhaging ( )	PUPILS	Control bleeding ( )	( )
Vomiting ( )	Equal ( )	Neck immobilization ( )	( )
Apparent death	Unequal ( )	Spine immobilization ( )	( )
at scene ( )	Dilated ( )	Limb splints ( )	( )
	Constricted ( )	Cardiac massage ( )	( )
	Do not react to light ( )	O.B. delivery ( )	( )
		Bandaging ( )	( )
		Anti-shock ( )	( )
		Administer oxygen ( )	( )
		Poison antidote ( )	( )
		Other (Specify): _____	

AMBULANCE PERSONNEL RELEASED BY \_\_\_\_\_  
 Signature

TIME: \_\_\_\_\_ AM \_\_\_\_\_ PM

TIME PATIENT SEEN BY PHYSICIAN: \_\_\_\_\_ AM \_\_\_\_\_ PM

## EMERGENCY ROOM REPORT

1. Open airway? Yes( ) No( )
2. If unconscious was patient on side? Yes( ) No( )
3. If unconscious was airway inserted? Yes( ) No( )
4. If unconscious was patient aspirated? Yes( ) No( )
5. Were proper and necessary dressings applied? Yes( ) No( )
6. Was bleeding controlled? Yes( ) No( )
7. Was necessary cardiac massage maintained? Yes( ) No( )
8. Was necessary artificial respiration maintained? Yes( ) No( )
9. Did attendant give adequate notification? Yes( ) No( )
10. Did attendant have proper equipment? Yes( ) No( )
1. Dead on arrival? Yes( ) No( )
2. In the case of very serious illness or injury, in your opinion, was the care provided by the attendant beneficial in saving the patient's life? Yes( ) No( )





## TRIP REPORT FORM

AMBULANCE SERVICE \_\_\_\_\_ LENGTH OF RUN (MILES) \_\_\_\_\_  
 XX AGE \_\_\_\_\_ DATE \_\_\_\_\_  
 ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ PHONE \_\_\_\_\_  
 NAME OF HOSPITAL \_\_\_\_\_ ADDRESS \_\_\_\_\_

TIME FACTOR	AM	PM	TYPE OF INJURY OR INCIDENT	TYPE OF RUN
Onset of emergency	_____	_____	(e.g., boating, assault, fall, suicide, etc.) _____	Emergency run ( )
Call Received	_____	_____	_____	Dry run ( )
Arrive scene	_____	_____	_____	Routine transfer ( )
Arrive E.R.	_____	_____	_____	

IF VEHICLE ACCIDENT	INJURY	SYMPTOMS PRESENT IF ILLNESS	
Driver ( )	Head ( )	Abdominal pain ( )	Poison-Drugs (Describe) ( )
Front Seat Pass. ( )	Neck ( )	Convulsions (Describe) ( )	Poison-Other (Describe) ( )
Back Seat Pass. ( )	Back ( )	Diabetic coma ( )	Shock ( )
Motorcyclist ( )	Chest ( )	Difficulty breathing ( )	Vomiting ( )
Bicyclist ( )	Abdomen ( )	Dizziness-weakness ( )	Impairment similar to
Pedestrian ( )	Pelvis ( )	Stomach problems ( )	that caused by alcohol ( )
	Extremity ( )	Hemorrhaging (Describe) ( )	Descriptions: _____
	Multiple ( )	Paralysis ( )	

VICTIM STATUS	VITAL SIGNS	FIRST AID PROVIDED	
Sex: M( ) F( )	Rate Time Rate Time		Before Crew
Conscious ( )	Pulse _____	By Crew	Arrived
Semiconscious ( )	Respiration _____	Removal from vehicle ( )	( )
Unconscious ( )	Blood Pressure _____	Clear airway ( )	( )
Convulsing ( )		Artificial resp. ( )	( )
Hemorrhaging ( )	PUPILS	Control bleeding ( )	( )
Unconscious ( )	Equal ( )	Neck immobilization ( )	( )
Apparent death	Unequal ( )	Spine immobilization ( )	( )
at scene ( )	Dilated ( )	Limb splints ( )	( )
	Constricted ( )	Cardiac massage ( )	( )
	Do not react to light ( )	O.B. delivery ( )	( )
		Bandaging ( )	( )
		Anti-shock ( )	( )
		Administer oxygen ( )	( )
		Poison antidote ( )	( )
		Other (Specify): _____	

AMBULANCE PERSONNEL RELEASED BY \_\_\_\_\_  
 Signature \_\_\_\_\_

TIME: \_\_\_\_\_ AM \_\_\_\_\_ PM

TIME PATIENT SEEN BY PHYSICIAN: \_\_\_\_\_ AM \_\_\_\_\_ PM

## EMERGENCY ROOM REPORT

1. Open airway? Yes( ) No( )
2. If unconscious was patient on side? Yes( ) No( )
3. If unconscious was airway inserted? Yes( ) No( )
4. If unconscious was patient aspirated? Yes( ) No( )
5. Were proper and necessary dressings applied? Yes( ) No( )
6. Was bleeding controlled? Yes( ) No( )
7. Was necessary cardiac massage maintained? Yes( ) No( )
8. Was necessary artificial respiration maintained? Yes( ) No( )
9. Did attendant give adequate notification? Yes( ) No( )
10. Did attendant have proper equipment? Yes( ) No( )
11. Dead on arrival? Yes( ) No( )
12. In the case of very serious illness or injury, in your opinion, the care provided by the attendant beneficial in saving the patient's life? Yes( ) No( )

\* \* HEALTH DEPARTMENT COPY \* \*

(Send to State Health Department at the end of each month)





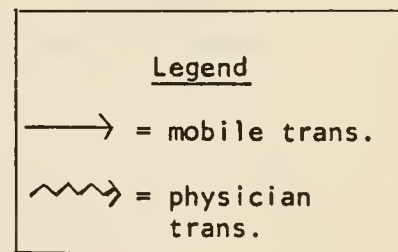
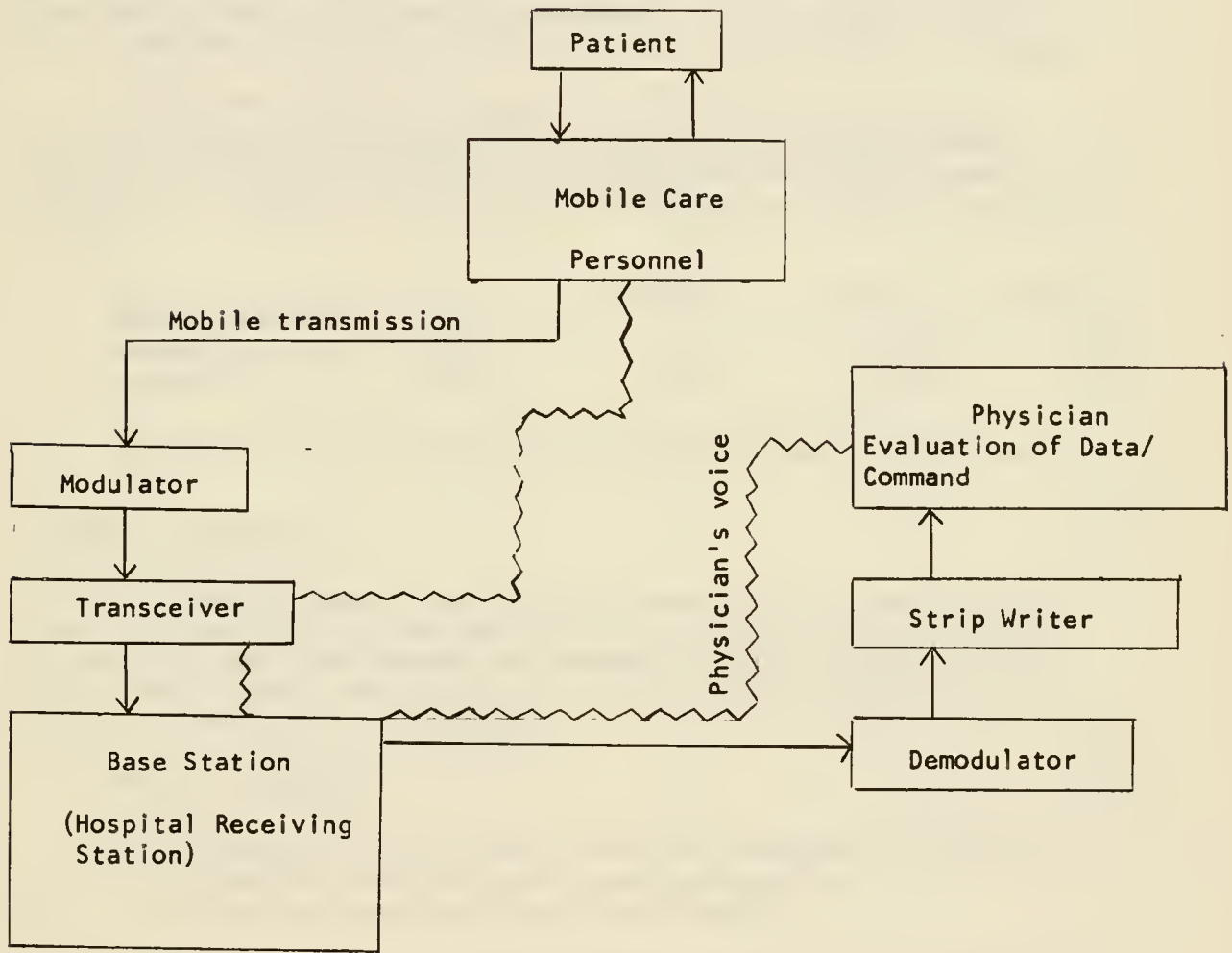
BIOMEDICAL TELEMETRY

In the medical sense, telemetry is usually applied to the use of an electrocardiogram to present heart action. However, the system can include facsimile, teletype, data transmission, and video circuits for television. The biomedical-telemetry system provides for the transmission of two different types of information: (1) the analog signal produced by a single-lead electrocardiogram or rhythm strip; and (2) descriptive voice information. The voice information provides objective data which is followed by the electrocardiogram transmission of short duration (about 30 seconds). The mobile transmission is then followed by the base voice command sequence in which the physician instructs the mobile care team on treatment, transportation, or requests for more data.

The FCC has provided a number of frequencies in the 460 MHz band for telemetry transmission between the mobile care unit and the hospital (UHF channels to be used solely for EKG and related voice transmission).



The following diagram shows the normal sequence of events in the use of biomedical telemetry if the base station is located in the hospital.





## HOSPITAL EMERGENCY DEPARTMENT SURVEY

In July, 1972, a survey of hospital emergency departments<sup>1</sup> was begun. Initially, the survey was conducted on site by surveyors of the Licensing and Certification Bureau, State Department of Health. Due to time limitations, however, those facilities unsurveyed as of 10-1-72, were mailed copies of the survey form and a joint cover letter from the Montana Hospital Association and the State Department of Health, asking that the hospital staffs complete the forms and return them to the Health Department. As of January 1, 1973, 37 of the 69 civilian hospitals in the state had returned the forms.

The survey returns accounted for 37 (56.7%) of the 66 hospitals in Montana not operated by the state or federal governments. The returns from the hospitals provided a generally broad representation of these institutions both geographically and in hospital size.

HS	9-23	25-40	50-90	142-270
Number Queried	27	17	10	22
Number Returned	9	12	7	9
Percent	33.3%	70.5%	70.0%	40%

Following is an analysis of the data generated by the survey.

GENERAL INFORMATION

In order to better visualize the capabilities of the various emergency departments, the hospitals, for selected questions were classified under four categories depending upon the number of available beds. These categories were: 9 to 23 beds; 25 to 40 beds; 50 to 90 beds; and 142 to 270 beds.

## Hospital Ownership

- 1 Hospitals was privately owned and operated for a profit
- 31 Hospitals were non-government, non-profit
- 5 Hospitals were government, non-federal

## Accreditation by the Joint Commission on Accreditation of Hospitals

Of the 37 hospitals, none of the 9-18 bed, one 25-40 bed, five of the 50-90 bed and all of the 142-270 bed hospitals, were accredited.

---

<sup>1</sup>Supported by DHEW purchase order PLD-9996-72





## Patient Visits and Admissions

The following number of beds were reported to be operating in the hospitals.

Hospital Size <sup>2</sup>	9-23	25-40	50-90	142-270	9-270
Range	9-23	25-40	50-90	142-270	9-270
Sum	153	371	542	1771	2837
Mean	17	30.9	77.4	196.7	76.7
Number	9	12	7	9	37

The total number of patients visits last year to these hospitals' emergency departments were:

HS	9-23	25-40	50-90	142-270	S
R	144-1216	255-2805	1678-3857	3672-13607	144-15607
S	5206	10148	16392	81705	113451
M	578	10148	2732	9078	3437
N	8	10	6	9	33 <sup>3</sup>

It was further reported that the percent of emergency conditions which required immediate diagnosis or treatment to preserve life or diminish morbidity were:

HS	9-23	25-40	50-90	142-270	S
R	3-30%	1-90%	10-23%	2-35%	1-90%
S	54%	205.5%	48%	110.5%	418%
M	6%	29.4%	16%	18.4%	19.1%
N	5	7	3	6	21

Urgent conditions which could have waited two to three hours without harmful effect were reported to be:

HS	9-23	25-40	50-90	142-270	S
R	10-16%	12.3-50%	NA <sup>4</sup>	15-60	10-60
S	157%	186.2%	NA	165%	508%
M	17.4%	37.2%	NA	33%	33.9%
N	5	5	NA	5	15

---

<sup>2</sup>Here after reported as:

Hospital Size: HS  
 Range: R  
 Sum: S  
 Mean: M  
 Number: N

<sup>3</sup>As not all questions were answered, totals will not always add up to the total for the hospitals.

<sup>4</sup>The hospitals within this category did not report answers for this question.



Non-emergency conditions which could have waited until the next day to be seen in out-patient departments or doctor's offices were listed as the following percents.

HS	9-23	25-40	50-90	142-270	S
R	9-75%	9-75%	NA	10-75%	9-75%
S	286	214.9	NA	210	710.9
M	47.7%	30.7%	NA	35%	37.4%
N	6	7	NA	6	19

Those reporting dead on arrivals indicated the following percentages:

HS	9-23	25-40	50-90	142-270	S
R	0-3%	.2-.1%	1-5%	.001-.5%	0-5%
S	4.0%	2.0%	13%	7.5%	16.5%
M	1.3%	0.5%	2.6%	1.5%	0.97%
N	3	4	5	5	17

In addition, the informants reported that the percents of emergency department patients admitted to the hospitals were:

HS	9-23	25-40	50-90	142-270	S
R	5-60%	5-20%	10-30%	10-28%	5-20%
S	101%	111%	90.6%	178%	480.6%
M	11.2%	13.9%	22.7%	19.8%	17.8%
N	6	8	4	9	27

### SUPPLIES AND EQUIPMENT

To the question, "What types of supplies and equipment are available?", the hospitals responded to a list of twenty-five items:

	In Emer. Dept.	Avail. in 5 minutes	Avail. Long. than 5 minutes	Not Available
9-23 bed:	42.1%	37.7%	6.7%	13.4%
25-40 bed:	45.7%	37.2%	6.4%	12.4%
50-90 bed:	62.7%	28.3%	5.4%	3.6%
142-270 bed:	72.9%	20.0%	5.3%	1.8%
Mean:	54.0%	31.3%	5.9%	8.6%

Taken as an aggregate, fully 13% of the items were listed as not available in the 9 to 23 bed hospitals whereas the larger 142-270 bed hospitals indicated that only 1.8% of the items were not available. The discrepancy between the larger and smaller hospitals can also be seen in the amount of equipment located within the emergency department itself. Notice that the larger Montana hospitals claimed that 72.9% of listed equipment was located in the emergency department but the small hospitals had just 42.1% located there.



EMERGENCY DEPARTMENT FACILITIES

Twenty-seven (27) of the hospitals said that they had separate facilities for emergency departments. Ten (10) hospitals indicated that they did not. All of the large hospitals had separate facilities as did about two-thirds of the small ones.

HS	9-23	25-40	50-90	142-270	S
Separate Facilities	6	8	4	9	27 for 72.9%
No Separate Facilities	3	4	3	0	10 for 27.1%

The floor space available for emergency department use varies greatly, as could be expected, with the hospitals with the most beds; also having the largest available space.

HS	9-23	25-40	50-90	142-270	S
R	72-756	120-352	120-1030	377-2180	72-2180
	sq. ft.	sq. ft.	sq. ft.	sq. ft.	sq. ft.
S	1268	5015	1896	8271	16450
	sq. ft.	sq. ft.	sq. ft.	sq. ft.	sq. ft.
M	140.9	626.9	474	1378.5	685
	sq. ft.	sq. ft.	sq. ft.	sq. ft.	sq. ft.
N	6	8	4	6	24

The reported available floor space ranged from 72 sq. ft. to 2180 sq. ft. with 688 sq. ft. being the average.

Taken collectively, the hospitals reported whether or not their emergency departments contained or were immediately adjacent to a list of eight facilities.

<u>Facility</u>	Percent having facilities				
	9-23	25-40	50-90	142-270	
a. Examination and treatment rooms	66.7%	75.0%	71.4%	100.0%	78.4%
b. Resuscitation and minor surgery rooms	44.4%	66.7%	71.4%	100.0%	70.2%
c. Fracture or plaster rooms	33.3%	58.3%	71.4%	88.9%	61.1%
d. Holding and observation beds	33.3%	25.0%	14.3%	55.6%	40.5%
e. Reception area for ambulatory patients	66.7%	75.0%	85.7%	100.0%	81.1%
f. Separate area for police and others	11.1%	8.3%	14.3%	33.3%	16.2%
g. Doctors' overnight room	71.4%	50.0%	28.6%	33.3%	43.2%
h. Active supply area	77.8%	75.0%	57.1%	100.0%	78.4%

The largest hospitals once again reported that they had more of the listed facilities than the small hospitals. The differences were especially noticeable in sections a,b,and c. In section g, however, the smallest hospitals reported the largest percentage of facilities having doctors' overnight rooms.



Virtually all of the hospitals indicated that their operating rooms were available on a priority basis to the emergency department. In addition, X-ray, laboratory, pharmacy and inhalation facilities were reported to be available on a priority basis in all of the hospitals except in one small hospital which reported that it had neither pharmacy nor inhalation therapy.

#### POLICY AND PROCEDURES

In 45.9 percent of the hospitals, governing boards have issued policy statements covering the operation of the emergency department. Additionally, 54.1 percent of the hospitals reported not having an emergency department committee. All of the hospitals in this last percentage were in the 9 to 90 bed range.

Of those having emergency department committees, the medical staffs, nursing services and hospital administrations were usually well represented. Noticeably lacking in representation on these committees were the ambulance services (5.4%), and social services (8.1%). X-ray, laboratory, and pharmacy (24.3%, 24.3%, 21.6%) had somewhat better representation.

Most of the hospitals (83.8%) reported having written operations manuals for emergency departments covering clinical procedures. Seventy-five percent (75%) of the hospitals also indicated having written administrative procedures for their emergency departments.





The following procedures were said to be normally performed in the emergency departments:

		9-23	%	25-40	%	50-90	%	142-270	%	S	%
a. Control of major external hemorrhage	yes	9	100.0	10	83.3	6	85.7	9	100.0	34	91.0
	no	0	0.0	2	16.7	1	14.3	0	0.0	3	8.1
b. Primary care and closure of wounds	yes	9	100.0	12	100.0	7	100.0	9	100.0	37	100.0
	no	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
c. Administration of intravenous drugs, fluids and blood	yes	7	77.8	8	66.7	7	100.0	9	100.0	31	83.8
	no	2	22.2	4	33.3	0	0.0	0	0.0	6	16.2
d. Immobilization of fractures	yes	9	100.0	11	91.7	7	100.0	9	100.0	36	97.3
	no	0	0.0	1	8.3	0	0.0	0	0.0	1	2.7
e. Cardio pulmonary resuscitation emergency steps	yes	9	100.0	11	91.7	6	85.7	9	100.0	35	94.6
	no	0	0.0	1	8.3	1	14.3	0	0.0	2	5.4
f. Cardio pulmonary resuscitation definitive therapy	yes	5	55.5	3	25.0	4	57.1	7	77.8	19	51.4
	no	4	44.5	7	75.0	3	42.9	2	22.2	18	48.6
g. Management of life-threatening cardiac dysrhythmias	yes	7	77.8	4	33.3	2	28.6	9	100.0	22	59.4
	no	2	22.2	8	66.7	5	71.4	0	0.0	15	40.6
h. Endotracheal intubation and ventilation	yes	9	100.0	8	66.7	7	100.0	9	100.0	33	89.2
	no	0	0.0	4	33.3	0	0.0	0	0.0	4	10.8
i. Tracheostomy	yes	8	88.9	9	75.0	7	100.0	9	100.0	33	89.2
	no	1	11.1	3	25.0	0	0.0	0	0.0	4	10.8
j. Aspiration - joint	yes	9	100.0	9	75.0	7	100.0	9	100.0	34	91.9
	no	0	0.0	3	25.0	0	0.0	0	0.0	3	8.1
k. Aspiration - abdomen	yes	9	100.0	9	75.0	5	71.4	8	88.9	31	83.8
	no	0	0.0	3	25.0	2	28.6	1	11.1	6	16.2
l. Aspiration - chest	yes	8	88.9	7	58.3	5	71.4	8	88.9	28	75.7
	no	1	11.1	5	41.7	2	28.6	1	11.1	9	24.3
m. Decompression of pleural space	yes	6	66.7	4	33.3	2	28.6	8	88.9	20	54.1
	no	3	33.3	8	66.7	5	71.4	1	11.1	17	45.9
n. Decompression of pericardial space	yes	4	44.4	1	8.3	1	14.3	7	77.8	13	35.1
	no	5	55.6	11	91.7	6	85.7	2	22.2	24	64.9
o. Treatment of poisonings, including gastric lavage	yes	9	100.0	12	100.0	6	85.7	9	100.0	36	97.3
	no	0	0.0	0	0.0	1	14.3	0	0.0	1	2.7



The following per cents of hospitals reported that they had in their emergency departments textbooks, monographs or other reference material on:

a. Emergency medical care	72.9%
b. Poison control (including telephone number of nearest Poison Control Center)	89.2%
c. Public health regulations	35.1%
d. Radiation exposure	32.4%
e. Infectious disease	48.6%

Almost ninety-two percent (91.9%) of the respondents indicated that the emergency department staffs had been instructed to look for an emergency medical identification symbol or card carried by the patient.

Over 97% of the emergency departments operate full time.

Almost 92% of the hospitals noted that their emergency departments are used by private physicians for the examination and treatment of non-emergency patients and for the administration of injectables.

To the question, "Do you use a classification system<sup>5</sup> to determine priority of treatment?", 81.1% of those responding said no.

More than half (59.4%) of those hospitals questioned reported that not all persons presenting themselves to the emergency department are seen by a physician. A physician was usually listed as being responsible for the discharging of the patient after treatment.

Approximately 57 percent (57%) of the hospitals had provisions for the management of special types of patients.<sup>6</sup> Once again, however, the smaller hospitals indicated shortages.

		9-23	%	25-40	%	50-90	%	142-270	%	S	%
Disturbed Patients	yes	5	55.6	5	41.7	3	42.9	8	88.9	21	56.8
	no	4	44.4	7	58.3	4	57.1	1	11.1	16	43.2
Contageous Patients	yes	5	55.6	6	50.0	2	28.6	9	100.0	22	59.4
	no	4	44.4	6	50.0	5	71.4	0	0.0	15	40.5

Not all hospitals (89.2%) said that they provided services for unscheduled non-emergency patients during normal working hours. On the other hand, these services were provided on nights and weekends by 97.3%.<sup>7</sup>

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<sup>5</sup>For examples of classification systems to determine priority of treatment, see page 171.

<sup>6</sup>For examples of facilities to handle disturbed or contageous patients, see page 171.

<sup>7</sup>For examples of how these services are provided, see page 171.



PROFESSIONAL AND SUPPORTIVE STAFFING

		Reported Shifts Per Week									
		Day	Evening		Night						
a.	Physician Coverage										
1.	On duty in Emergency Dept.	0	1		1						
2.	On duty within hospital	28	27		27						
3.	On call outside hospital	18	19		19						
4.	Neither on duty nor on call	0	0		0						
b.	Registered Nurse Coverage										
1.	On duty in Emergency Dept.	12	12		5						
2.	On duty within hospital	26	36		28						
3.	On call outside hospital	4	3		4						
4.	Neither on duty nor on call	0	0		0						
c.	Licensed Practical Nurse Coverage										
1.	On duty in Emergency Dept.	3	4		0						
2.	On duty within hospital	17	14		16						
3.	On call outside hospital	0	1		0						
4.	Neither on duty nor on call	6	6		7						
d.	Ancillary Personnel Coverage										
1.	On duty in Emergency Dept.	2	2		0						
2.	On duty within hospital	19	14		17						
3.	On call outside hospital	1	5		5						
4.	Neither on duty nor on call	5	5		5						
		On duty in hospital    Always on call after hours									
e.	Support Service Personnel	24 hrs.		Within 15 min.	16-30 min.	Over 30 min.	Not always Available				
1.	X-ray technician	0	0.0%	28	75.7%	9	24.3%	0	0.0%	0	0.0%
2.	Laboratory technician	0	0.0%	29	78.4%	8	21.6%	0	0.0%	0	0.0%
3.	Pharmacist	0	0.0%	26	70.2%	7	18.9%	3	8.1%	1	2.7%
4.	Inhalation therapist	5	13.5%	10	27.0%	6	16.2%	0	0.0%	10	27.0%

AVAILABILITY OF SPECIALTY COVERAGE

No hospital reported having 24 hour per day specialty coverage in their emergency department. The reported breakout of coverage follows:





9-23 Bed Hospitals  
(N=9)

31. What is the availability of specialty coverage?

# \_\_\_\_\_

	In emergency department 24 hours per day	Immediately available within hospital 24 hours/day	Not in hospital Immediate recall within 30 min.	Delayed recall within 24 hrs.	Not regularly on call but available within 3 hrs.	Never available for in hospital service
a. Anesthesiologist			5 55.6%			4 44.4%
b. General surgeon		2 22.2%	4 44.4%	1 11.1%	2 22.2%	
c. Internist				1 11.1%		7 77.8%
d. Internist-cardiologist				1 11.1%	1 11.1%	6 66.7%
e. Neurosurgeon						6 66.7%
f. Obstetrician-gynecologist		1 11.1%		1 11.1%		5 55.6%
g. Ophthalmologist			1 11.1%	1 11.1%		6 66.7%
h. Oral surgeon						6 66.7%
i. Orthopedic surgeon				1 11.1%		6 66.7%
j. Otolaryngologist				1 11.1%		6 66.7%
k. Pediatrician				1 11.1%		6 66.7%
l. Plastic surgeon				1 11.1%	1 11.1%	6 66.7%
m. Psychiatrist				1 11.1%		6 66.7%
n. Radiologist			1 11.1%		1 11.1%	5 55.6%
o. Thoracic surgeon				1 11.1%		5 55.6%
p. Urologist				1 11.1%		6 66.7%
q. Other, Specify _____						



25-40 Bed Hospitals  
(N=12)

31. What is the availability of specialty coverage?

#

	In emergency department 24 hours per day	Immediately available within hospital 24 hours/day	Not in hospital Immediate recall within 30 min.	Delayed recall within 24 hrs.	Not regularly on call but available within 3 hrs.	Never available for in hospital service
a. Anesthesiologist			1 8.3%	1 8.3%	2 16.7%	7 58.3%
b. General surgeon			3 25.0%	2 16.7%	2 16.7%	3 25.0%
c. Internist			1 8.3%	1 8.3%	2 16.7%	7 58.3%
d. Internist-cardiologist				1 8.3%	1 8.3%	8 66.7%
e. Neurosurgeon				1 8.3%	1 8.3%	8 66.7%
f. Obstetrician-gynecologist			1 8.3%	2 16.7%	2 16.7%	7 58.3%
g. Ophthalmologist				1 8.3%	2 16.7%	8 66.7%
h. Oral surgeon				1 8.3%	1 8.3%	7 58.3%
i. Orthopedic surgeon			1 8.3%	2 16.7%	2 16.7%	6 50.0%
j. Otolaryngologist				1 8.3%	3 25.0%	7 58.3%
k. Pediatrician			1 8.3%		3 25.0%	7 58.3%
l. Plastic surgeon			2 16.7%		1 8.3%	7 58.3%
m. Psychiatrist				2 16.7%	2 16.7%	7 58.3%
n. Radiologist				3 25.0%	5 41.7%	3 25.0%
o. Thoracic surgeon				1 8.3%	2 16.7%	8 66.7%
p. Urologist				1 8.3%	2 16.7%	8 66.7%
q. Other, Specify						



50-90 Bed Hospitals  
(N=7)

31. What is the availability of specialty coverage?

# \_\_\_\_\_

	In emergency department 24 hours per day	Immediately available within hospital 24 hours/day	Not in hospital Immediate recall within 30 min.	Delayed recall within 24 hrs.	Not regularly on call but available within 3 hrs.	Never available for in hospital service
a. Anesthesiologist			3 42.9%			3 42.9%
b. General surgeon			3 42.9%		2 28.6%	1 14.3%
c. Internist			2 28.6%		2 28.6%	2 28.6%
d. Internist- cardiologist			1 14.3%		1 14.3%	2 28.6%
e. Neurosurgeon			1 14.3%			4 57.1%
f. Obstetrician- gynecologist			2 28.6%		1 14.3%	2 28.6%
g. Ophthalmologist			3 42.9%			2 28.6%
h. Oral surgeon						5 71.4%
i. Orthopedic surgeon			1 14.3%			4 57.1%
j. Otolaryngologist			1 14.3%			4 57.1%
k. Pediatrician			2 28.6%			3 42.9%
l. Plastic surgeon						5 71.4%
m. Psychiatrist						3 42.9%
n. Radiologist			4 57.1%		1 14.3%	1 14.3%
o. Thoracic surgeon			1 14.3%		1 14.3%	4 57.1%
p. Urologist			1 14.3%			4 57.1%
q. Other, specify _____						



# \_\_\_\_\_

31. What is the availability of specialty coverage?

	In emergency department 24 hours per day	Immediately available within hospital 24 hours/day	Not in hospital Immediate recall within 30 min.	Delayed recall within 24 hrs.	Not regularly available within 3 hrs.	Never available for in hospital service
a. Anesthesiologist			8 88.9%			1 11.1%
b. General surgeon			9 100.0%			
c. Internist			9 100.0%			
d. Internist-cardiologist			7 77.8%			1 11.1%
e. Neurosurgeon			4 44.4%		2 22.2%	3 33.3%
f. Obstetrician-gynecologist			9 100.0%			
g. Ophthalmologist			8 88.9%			1 11.1%
h. Oral surgeon			5 55.6%			3 33.3%
i. Orthopedic surgeon			8 88.9%			1 11.1%
j. Otolaryngologist			8 88.9%			2 22.2%
k. Pediatrician			8 88.9%			
l. Plastic surgeon			2 22.2%		2 22.2%	3 33.3%
m. Psychiatrist			5 55.6%		2 22.2%	2 22.2%
n. Radiologist			8 88.9%			
o. Thoracic surgeon			8 88.9%		1 11.1%	1 11.1%
p. Urologist			7 77.8%		1 11.1%	1 11.1%
q. Other, specify _____						





TOTAL HOSPITALS  
(N=37)

#

31. What is the availability of specialty coverage?

	In emergency department 24 hours per day	Immediately available within hospital 24 hours/day	Not in hospital Immediate recall within 30 min.	Delayed recall within 24 hrs.	Not regularly available within 3 hrs.	Never available for in hospital service
a. Anesthesiologist			17	1	2	15
b. General surgeon		2	19	2	6	4
c. Internist			12	1	4	9
d. Internist-cardiologist			8	2	3	17
e. Neurosurgeon			5	1	3	21
f. Obstetrician-gynecologist		1		12	3	14
g. Ophthalmologist			12	2	2	17
h. Oral surgeon			5	1	3	21
i. Orthopedic surgeon			10	3	2	17
j. Otolaryngologist			9	2	3	18
k. Pediatrician			11	1	3	17
l. Plastic surgeon			4	1	3	21
m. Psychiatrist			5	3	4	18
n. Radiologist			13	12	7	9
o. Thoracic surgeon			9	2	4	18
p. Urologist			8	2	3	19
q. Other, specify						



TRAINING

The hospitals, taken as on aggregate, reported that they had structured training programs in the emergency departments for:

	<u>Physicians</u>		<u>Registered Nurses</u>		<u>LPN's</u>		<u>Other Emergency Dept. Staff</u>	
1. Only for orientation of new employees	4	10.8%	10	27.0%	9	24.3%	6	16.2%
2. Given on continuous or fixed periodic scheduled basis	0	0.0%	6	16.2%	4	10.8%	3	8.1%
3. Given occasionally but on no fixed scheduled basis	3	8.1%	16	43.2%	13	35.1%	8	21.6%

Covering

1. Cardiopulmonary Resuscitation	3	8.1%	20	54.1%	15	40.5%	10	27.0%
2. Hemorrhage Control	3	8.1%	20	54.1%	15	40.5%	11	29.7%
3. Management of Shock	3	8.1%	20	54.1%	15	40.5%	11	29.7%
4. Records and Administrative methods	3	8.1%	20	54.1%	15	40.5%	11	29.7%

It should also be pointed out that none of the small 9-23 bed hospitals reported having training programs for their physicians.

AMBULANCE SERVICES AND RELATED ACTIVITIES

Six (6) hospitals reported that they operated ambulance services. Seven (7) hospitals listed hospital based ambulances. Six of these ambulance services indicated having EMT-Ambulance attendants.

Fifty-four percent (54%) of the hospitals said that they provided training for ambulance personnel not based at the hospital.

Seventy-five percent (75%) of the hospitals reported having exchange agreements with the ambulances for linens; forty-eight percent (48%) for stretchers; and sixty-two percent (62.1%) for other supplies.

The emergency department was said to be immediately accessible to the ambulances in 89.2% of the hospitals. In addition, the ambulance entrance was capable of handling multiple ambulances in 22 or 59.4% of the hospitals.



The percentage of total number of emergency department patients brought in by ambulance was reported as:

	9-23	25-40	50-90	142-270	S
HS	5-50%	6-50%	20-80%	5-45%	5-80%
R	114%	216%	125%	88.4%	543.4%
S	12.6%	30.9%	41.6%	14.7%	24.7%
M	6	7	3	6	22
N					

The percentage of patients brought in by ambulances with advance notification to the hospitals were:

	9-23	25-40	50-90	142-270	S
HS	4-100%	5-100%	20-100%	5-95%	4-100%
R	373%	580%	180%	205%	1338%
S	41.4%	72.5%	60%	34.2%	58.2%
M	6	8	3	6	23
N					

On patients brought in by ambulance, information was obtained on care given prior to arrival at the hospitals by:

a. No information obtained	3	8.1%
b. Advanced telephone communication	19	51.3%
c. Advance radio communication	16	43.2%
d. Verbal communication from ambulance personnel	31	83.8%
e. Medical tag or record accompanying patient	10	27.0%

Twelve (12) of the thirty-seven (37) hospitals reported that a helicopter pad or access by helicopter to the hospital was available.

The hospitals said that they maintained emergency communications capabilities with:

	<u>Telephone</u>						<u>Two-Way Radio</u>					
	<u>None</u>		<u>Private Line</u>		<u>Intercom "Hot" Line</u>		<u>From Emergency Department</u>		<u>From Switch-board</u>			
	#	%	#	%	#	%	#	%	#	%	#	%
a. Physicians	2	5.4	28	75.7	3	8.1	5	13.5	4	10.8		
b. Ambulance Vehicles	10	27.0	13	35.1	3	8.1	8	4.6	4	10.8		
c. Ambulance Company Base	6	16.2	17	45.9	0	0.0	4	10.8	2	5.4		
d. Central Dispatch	12	32.4	9	24.3	1	2.7	2	5.4	0	0.0		
e. Law Enforcement	3	8.1	26	70.2	1	2.7	5	13.5	4	10.8		
f. Fire Department	3	8.1	28	75.7	1	2.7	4	10.8	3	8.1		
g. Civil Defense	8	21.6	21	56.2	1	2.7	2	5.4	4	10.8		





There are no telemetry systems operating in the state between the ambulances and the emergency department or the cardiac care unit. Only four (4) hospitals reported having two-way radio equipment manned 24 hours a day. Nine (9) or 24.3% of the hospitals said that they had radio (beeper) paging systems for the physicians.

#### HIGHWAY AND DIRECTIONS SIGNS

Ten (10) of the reporting hospitals indicated that they lacked hospital directional signs on major highway arteries. In addition, six (6) of the hospitals revealed that there were no signs on the streets in the vicinity of the hospital. "Emergency Department" signs were on the hospital grounds of almost seventy-three percent (73%) of the hospitals and only 56.2% of these were illuminated at night.

#### MEDICAL RECORDS

To the question, "Is a medical record prepared for every patient treated in the emergency department?", eighty-six percent (86%) of the hospitals responded positively.

#### INTERHOSPITAL AND COMMUNITY RELATIONS

The reported percent of emergency department patients transferred to other short-term general hospitals were:

HS	9-23	25-40	50-90	142-270	S
R	1-25%	0-25%	0-5%	0-10%	0-25%
S	56%	40.6%	6%	21%	118.2%
M	6.2%	5.1%	1.2%	3%	47.7%
N	5	8	5	7	25

Seventeen of the emergency departments, or 45.9%, said that they had agreements with other hospitals to exchange equipment and supplies.

The following percent of the hospitals also reported that they participated in community-wide planning for emergency medical services with existing:

	<u>No.</u>	<u>Percent</u>
a. Comprehensive health planning agencies	22	59.4
b. Community emergency medical services councils	13	35.1
c. Hospital Councils	13	35.1
d. Other Hospitals	20	54.1
e. State and local health departments	23	62.1
f. Civil authorities	23	62.1
g. Other planning or provider groups	14	37.8



The following percent of hospitals related that their hospital disaster plans were characterized by:

	<u>NO.</u>	<u>Percent</u>
a. A disaster plan covering the emergency department	31	83.8
b. A disaster plan posted and copies readily available to the emergency department staff	26	70.2
c. A disaster plan covering the management of mass casualties	27	72.9
d. A disaster plan involving:		
1. Other hospitals in the area	14	37.8
2. Ambulance services	28	75.7
3. All community resources	29	78.4

During the past year, of the 37 hospitals surveyed, the disaster plan was reportedly tested in the following size hospitals:

	<u>No.</u>	<u>Percent</u>
9-23 bed	1	1.1
25-40 bed	3	25.0
50-90 bed	3	42.9
142-270 bed	<u>8</u>	<u>88.9</u>
All hospitals	15	40.5

In eight of the hospitals, all of which were larger than 50 bed, the disaster plan was tested more than once.



FOOTNOTE 5

The following are examples of classification systems to determine priority of treatment as listed by hospitals throughout the state:

- Priority depends upon nurse and physician evaluation.
- No actual system; critical patients cared for first.
- Code yellow: not critical, but treat immediately.
- Code red: more than critical, alert for external disaster,
- Dr. Curry Scale.
- A-B-C-D-E-F Scale.
- Burns: use Rule of Nine
- 1. Cardiopulmonary - Comitose
- 2. Acute trauma
- 3. Non emergent

FOOTNOTE 6

The following are examples of facilities to handle disturbed or contagious patients as listed by hospitals throughout the state:

- Contagious patients are admitted to isolation rooms.
- Disturbed patients are cared for only until referral can be arranged.
- Disturbed patients are admitted to security rooms.
- Restraints and straight jackets are available for disturbed patients.
- Emergency entrance to Warm Springs for disturbed patients,
- Psychiatric nurse, clinical specialist on call.
- Psychiatric unit for disturbed patients.
- EMT personnel on call 24 hours a day.

FOOTNOTE 7

The following are examples of services provided for unscheduled non-emergency patients during normal working hours or nights and weekends as listed by hospitals throughout the state:

- Normal working hours:
  - first come basis.
  - O.P. clinics.
  - Admission of patients on a 24-hour basis.
  - Lab work.
  - Patient's doctor is notified.
  - Out-patient service and doctor on call.
  - Clinic for Welfare Dept. patients Mon-Fri, 9-11:30 a.m.
  - Constant nursing service, emergency room and on-call physicians.
- Nights and weekends:
  - Dr. is always called. RN's wait to determine if it's an emergency.
  - Dr. on call 24 hours.
  - No schedule, treated like all out-patients.
  - Accept patients as necessary.



DIRECTORY OF  
 PACKAGED DISASTER HOSPITALS  
 AND  
 HOSPITAL RESERVE DISASTER INVENTORY UNITS

City	Hospital Address Phone Number	Administrator
Anaconda	Community Hospital of Anaconda 600 Oak Street Phone: 563-5262	Warren Crosten
Billings	Billings Deaconess Hospital 2813 9th Avenue North Phone: 259-5551	Robert D. Howe
	St. Vincent's Hospital 2915 12th Avenue North Phone: 252-2121	Sister Michel
Butte	St. James Community Hospital 400 South Clark Phone: 792-8361	Sister M. Clarice Lonsberg
Conrad	Pondera County Hospital P.O. Box 757 Phone: 278-3211	Sister Eumelia
Glasgow	Frances Mahon Deaconess Hosp. 621 Second Street South Phone: 228-4351	Ernest R. Logan
Glendive	Glendive Community Hospital Ames and Prospect Phone: 365-3306	Phillips M. Auble
Great Falls	Cascade Co. Convalescent Hosp. 1130 17th Avenue South Phone: 761-7600	C. J. Schrader
	Columbus Hospital 1601 Second Avenue North Phone: 727-3333	Frank Stewart
	Montana Deaconess Hospital 1101 26th Street South Phone: 761-1200	Fred K. Holbrook





City	Hospital Address Phone Number	Administrator
Havre	Northern Montana Hospital P.O. Box 1231 Phone: 265-2211	A. H. Moeller
Helena	St. Peter's Hospital 2475 Broadway Phone: 442-2480	Gerald Leavitt
Kalispell	Kalispell General Hospital 723 5th Avenue Phone: 756-9081	Alex S. McAllister
Lewistown	Central Montana Hospital 211 High Hill Phone: 538-5461	James R. Adams
Libby	St. John's Lutheran Hospital 350 Louisiana Avenue Phone: 293-4186	Robert L. Aronson
Miles City	Holy Rosary Hospital 2101 Clark Phone: 232-2540	David Patton
	Veteran's Adm. Hospital 210 S. Winchester Avenue Phone: 232-3060	Richard G. Jones
Missoula	Missoula General Hospital 300 North Rose Phone: 542-2191	D. A. Wanberg
	St. Patrick Hospital 500 West Broadway Phone: 543-7271	Arthur V. Crandall
Polson	St. Joseph Hospital Skyline Drive Phone: 883-5377	Sister Cecile Audibert
Sidney	Community Memorial Hospital 221 Fifth Southwest Phone: 482-2120	Ralph Johnson
Warm Springs	Warm Springs State Hospital Phone: 693-2221	Stanley J. Rogers, M.D.



LEGISLATION APPENDIX

In addition to the laws listed in this appendix, the State Department of Health and Environmental Sciences recommends that consideration be given to the passage of laws which would allow EMT's to administer I.V.'s and medications upon verbal orders of a physician.

The State Department of Health and Environmental Sciences also recommends that consideration be given to the revision of the motor vehicle code (RCM 32-21-132) to require flashing blue and white lights on emergency medical vehicles. This change would bring Montana law in harmony with national standards.



UNITED STATES OF AMERICA,        )  
     State of Montana                ) ss.

I, FRANK MURRAY, Secretary of State of the State of Montana, do hereby certify that the following is a true and correct copy of Senate Bill No. 159, Chapter No. 387, Montana Session Laws of 1971, enacted by the Forty-second Session of the Legislative Assembly of the State of Montana, approved by Forrest H. Anderson, Governor of said State, on the fifteenth day of March, 1971, and effective on the first day of January, 1972.

IN TESTIMONY WHEREOF, I have here-  
 unto set my hand and affixed the  
 Great Seal of said State.

Done at the City of Helena, the  
 Capital of said State, this fif-  
 teenth day of March, 1971.

s/Frank Murray

---

Frank Murray  
 Secretary of State

CHAPTER NO. 387  
 MONTANA SESSION LAWS 1971  
 SENATE BILL NO. 159

AN ACT TO ESTABLISH MINIMUM UNIFORM STANDARDS AND REGULATIONS FOR  
 AMBULANCE SERVICES AS REQUIRED BY PUBLIC INTEREST.

BE IT ENACTED BY THE LEGISLATIVE ASSEMBLY OF THE STATE OF MONTANA:

Section 1. Findings and purposes. The public welfare re-  
 quires the establishment of minimum uniform standards for the  
 operation of ambulance services as defined in section 2 of this  
 act, and the control, inspection, and regulation of persons engaged  
 therein, in order to prevent or eliminate improper care that may  
 endanger the health of the public. The regulation of establishments  
 providing such service is in the interest of social well-being, and  
 the health and safety of the state and all its people.

Section 2. Definitions. As used in this act, unless the con-  
 text clearly indicates otherwise: (1) "Ambulance" means any  
 privately or publicly owned motor vehicle that is especially designed  
 or constructed, and equipped, which is maintained and used for the  
 transportation of patients, including dual purpose police patrol  
 cars and funeral coaches or hearses which otherwise comply with  
 the provisions of this act, but does not include any such motor  
 vehicle owned by, or operated under the direct control of the United  
 States or the state of Montana.

SENATE BILL NO. 159





(2) "Ambulance service" means any person who operates an ambulance.

(3) "Attendant" means a trained or otherwise qualified individual responsible for the operation of an ambulance and the care of the patients whether or not the attendant also serves as driver.

(4) "Attendant-driver" means a person who is qualified as an attendant and a driver.

(5) "Driver" means an individual who drives an ambulance.

(6) "Dual purpose police patrol car" means a vehicle, operated by a police department, which is equipped as an ambulance, even though it is also used for patrol or other police purposes.

(7) "Executive Officer" means the executive officer of the Montana state department of health or his designated official.

(8) "Board" means the board of health of the state of Montana.

(9) "License officer" means the executive officer of the Montana state department of health or his designated official.

(10) "Patient" means an individual who is sick, injured, wounded, or otherwise incapacitated or helpless.

(11) "Person" means any individual, firm, partnership, association, corporation, company, group of individuals acting together for a common purpose or organization of any kind, including any governmental agency other than the United States or the state of Montana.

Section 3. License required. (1) Every person conducting or operating an ambulance service shall procure a license issued by the department. A separate license shall be required for each establishment.

(2) Applications for a license shall be made in writing to the department on forms specified by the department.

(3) Licenses shall be granted as a matter of right, unless conditions exist as specified by this act which are grounds for a cancellation or denial of a license. The applicant may apply for a hearing and judicial review as specified by this act upon being denied a license or upon cancellation.

Section 4. Fee--term of license. (1) There shall be paid to the department with each application for a license or for renewal of a license, an annual license fee of five dollars (\$5). The department shall deposit fees with the state treasurer to the credit of the state general fund.

(2) Each license shall expire on December 31 following its date of issue, unless cancelled for cause. Renewal may be obtained by paying the required annual license fee. The license shall not be transferable nor be applicable to any premises other than that for which originally issued.



Section 5. Cancellation or denial of licenses--procedure.

(1) The executive officer may cancel any license if he finds that the licensee has violated provisions or regulations of this act, and the licensee has failed or refused to remedy or correct the violation. Submission to the department of an acceptable plan of correction within ten (10) days after receipt from the executive officer of written notice of violation, and execution of an acceptable plan within the time prescribed in the written notice of approval thereof by the executive officer, shall be a bar to prosecution for violation.

(2) The executive officer shall not deny or cancel any license without:

(a) Delivery to the applicant or licensee of a written statement of the grounds therefor or the charge involved.

(b) An opportunity to answer at a hearing before the board to show cause, if any, why the license should not be denied or cancelled. In such case, the licensee shall make written request to the executive officer of the department for a hearing within ten (10) days after notice of the grounds or charges has been received. If the board finds that the violations of provisions or regulations of this act do not constitute a danger to the public health and would produce a hardship without equal or greater benefit to the public, the board may grant an exception to the licensee for a period not to exceed one (1) year, during which time a license would not be denied the licensee nor would his license be cancelled. Subsequent exceptions may be granted the licensee, each for a period not to exceed one (1) year, and each after a hearing before the board.

(3) Upon cancellation of a license, the license certificate shall be returned to the executive officer for destruction or deletion as the executive officer may direct in his notice of cancellation.

(4) Any order made by the executive officer after hearing, as provided herein, denying or cancelling any license may be reviewed by application for writ of review (certiorari) commenced in the district court of the county in which the licensed premises are located, within ten (10) days from the date of notice in writing of the executive officer's order of denial or cancelling such license has been served upon him.

(5) Whenever the department shall furnish evidence to the county attorney of any county in this state, the county attorney shall prosecute any person, persons, firm, or corporation violating any provisions of this act, or any rules or regulations effective under this act.

Section 6. Rules and regulations--cooperative agreements.

(1) The board shall prescribe and enforce rules and regulations which are necessary to carry out the provisions of this act. These rules and regulations shall relate to ambulance equipment, training, operations (records), personnel, cleanliness, and insurance.

(2) No rules or regulations shall be effective until a public hearing has been held for review of the rules and regulations. Notice



of the public hearing shall be sent by ordinary mail at least thirty (30) days before the hearing to all Montana licensed operators along with a copy of the proposed regulations.

(3) The department may enter into cooperative agreements with any of the state agencies or political subdivisions for the purpose of carrying out the provisions of this act, or any part thereof.

(4) Pursuant to the provisions of this act, required equipment in an ambulance which is maintained and regularly used for the transportation of patients shall consist of the minimal equipment for ambulances as adopted by the American College of Surgeons, March, 1967, and required training shall be set at a level of advanced American Red Cross first aid or its equivalent. Nothing in this section shall preclude the use of any vehicle for the transportation of the injured in instances of emergency, need, or disaster situations, and the board shall not prescribe and enforce any rules and regulations related to ambulance equipment and training which exceed these requirements.

Section 7. Inspections. (1) The department shall make all necessary investigations and inspections for enforcement of this act. Each authorized representative shall make regular inspections as the rules and regulations of the board may direct, and such special inspections as the department may from time to time direct, and he shall make such reports relative to conditions existing at such times and in such manner as the board may direct.

(2) All persons authorized by this act or by regulations adopted under this act shall have free access at all reasonable hours to any of the establishments listed and defined in section 2 of this act for the purpose of making inspections.

Section 8. Authority of board to issue subpoenas. In any proceeding under this act, the board may administer oaths and issue subpoenas, summon witnesses, and take testimony of any person within the state of Montana.

Section 9. Penalty. Any person violating any provision of this act or regulation made hereunder shall be guilty of a misdemeanor, and, upon conviction, shall be fined not less than fifty dollars (\$50) nor more than one hundred dollars (\$100) for the first offense, and not less than seventy-five dollars (\$75) nor more than two hundred dollars (\$200) for the second offense; and for third and subsequent offenses, by a fine of not less than two hundred dollars (\$200) nor more than five hundred dollars (\$500) or imprisonment in the county jail not to exceed ninety (90) days.

Section 10. License fee--supersedes other fees. Payment of the license fee stipulated in this act shall be accepted in lieu of any and all existing state fees and charges for like purposes or intent which may be existent prior to the adoption of this act.

Section 11. Severability. It is the intent of the legislative assembly that if a part of this act is invalid, all valid parts that are





severable from the invalid part remain in effect. If a part of this act is invalid in one or more of its applications, the part remains in effect in all valid applications that are severable from the invalid applications.

Section 12. Effective date. This act is effective January 1, 1972.





REGULATION NUMBER 11-001 LICENSING OF AMBULANCE SERVICES  
Adopted March 24, 1972

MONTANA STATE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES

Statutory Authority: Title 69 - Chapter 36  
R.C.M. 1947

SECTION 1. LICENSING

PART A. GENERAL

1. License Requirements. Every person conducting or operating an ambulance service shall procure a license issued by the department. A separate license shall be required for each establishment.
2. Communications. All communications concerning these regulations shall be addressed to the Montana State Department of Health and Environmental Sciences, Helena, Montana 59601.
3. General Definitions.
  - (1) "Ambulance" means any privately or publicly owned motor vehicle that is especially designed or constructed, and equipped, which is maintained and used for the transportation of patients, including dual purpose police patrol cars and funeral coaches or hearses which otherwise comply with the provisions of this act, but does not include any such motor vehicle owned by, or operated under the direct control of the United States or the State of Montana.
  - (2) "Ambulance Service" means any person who operates an ambulance.
  - (3) "Attendant" means a trained or otherwise qualified individual responsible for the operation of an ambulance and the care of patients whether or not the attendant also serves as driver.
  - (4) "Attendant - Driver" means a person who is qualified as an attendant and a driver.
  - (5) "Driver" means an individual who drives an ambulance.
  - (6) "Dual Purpose Police Patrol Car" means a vehicle, operated by a police department, which is equipped as an ambulance, even though it is also used for patrol or other police purposes.
  - (7) "Director" means the Director of the Montana State Department of Health and Environmental Sciences or his designated official.
  - (8) "Board" means the Montana State Board of Health and Environmental Sciences.
  - (9) "License Officer" means the Director of the Montana State Department of Health and Environmental Sciences or his designated official.



- (10) "Patient" means an individual who is sick, injured, wounded, or otherwise incapacitated or helpless.
- (11) "Person" means any individual, firm, partnership, association, corporation, company, group of individuals acting together for a common purpose or organization of any kind, including any governmental agency other than the United States or the State of Montana.

#### PART B. LICENSING PROVISIONS

1. Separate License. A separate license shall be required for each establishment.
2. Applications. Applications for a license shall be made in writing to the department on forms specified by the department.
3. Matter of Right. Licenses shall be granted as a matter of right unless conditions exist as specified by the law which are grounds for a cancellation or denial of a license. In the event a license is not granted, the applicant may apply for a hearing and judicial review as specified in Section 1, Part C., Paragraph 1-5.
4. Fee. There shall be paid to the department with each application for a license, or for renewal of a license, an annual license fee of five dollars (\$5.00).
5. Term of License. Each license shall expire on December 31, following its date of issue, unless cancelled for cause. Renewal may be obtained by paying the required annual license fee. The license shall not be transferable nor be applicable to any premises other than that for which originally issued.

#### PART C. CANCELLATION OR DENIAL OF LICENSE

1. Cancellation. The Director may cancel any license if he finds that the licensee has violated provisions or regulations of this act, and the licensee has failed or refused to remedy or correct the violation. Submission to the department of an acceptable plan of correction within ten (10) days after receipt from the Director of written notice of violation, and execution of an acceptable plan within the time prescribed in the written notice of approval thereof by the Director, shall be a bar to prosecution for violation.
2. The Director shall not deny or cancel any license without:
  - (a) Delivery to the applicant or licensee of a written statement of the grounds therefor or the charge involved.
  - (b) An opportunity to answer at a hearing before the Board to show cause, if any, why the license should not be denied or cancelled. In such case, the licensee shall make written request to the Director of the department for a hearing within ten (10) days after notice of the grounds or charges has been received. If the Board finds that



the violations of provisions or regulations of this act do not constitute a danger to the public health and would produce a hardship without equal or greater benefit to the public, the Board may grant an exception to the licensee for a period not to exceed one (1) year, during which time a license would not be denied the licensee nor would his license be cancelled. Subsequent exceptions may be granted the licensee, each for a period not to exceed one (1) year, and each after a hearing before the Board.

3. Upon cancellation of a license, the license certificate shall be returned to the Director for destruction or deletion as the Director may direct in his notice of cancellation.
4. Any order made by the Director after hearing, as provided herein, denying or cancelling any license may be reviewed by application for writ of review (certiorari) commended in the district court of the county in which the licensed premises is located, within ten (10) days from the date of notice in writing of the Director's order of denial or cancelling such license has been served upon him.
5. Whenever the department shall furnish evidence to the county attorney of any county in this state, the county attorney shall prosecute any person, persons, firm or corporation violating any provisions of this act, or any rules or regulations effective under this act.

## SECTION II. AMBULANCES AND AMBULANCE EQUIPMENT

### PART A. AMBULANCES

1. Vehicles. Effective April 1, 1972, all new vehicles purchased, whether as a replacement or in the creation of a new ambulance service, must conform to current specifications as set forth below.
  - (1) The ambulance vehicle should have space for a driver, attendant and two litter patients. The patients should be so positioned in the vehicle that at least one can be given life-support in transit. The vehicle should be able to carry equipment and medical supplies for safeguarding personnel and patients under hazardous conditions, and for maximum emergency medical care, both outside the vehicle and in transit. The emergency vehicle should be designed to provide maximum safety and comfort for the patient.
  - (2) Minimum space between the head of the litter and the bulkhead of the vehicle should be at least 25 inches, including a seat for an attendant so positioned that he can provide respiratory care and resuscitation.
  - (3) Minimum space at the foot of the litter should be 15 inches to accomodate traction splints and an attendant.
  - (4) Minimum space between litters should be 25 inches so that an attendant can move between litters, and kneel to perform





external cardiac compression and other medical functions.

- (5) While a height of 60 inches is preferable throughout the interior of the emergency vehicle, the minimal height should be at least 54 inches from floor to ceiling. This minimal height provides approximately 39 inches from the top of the litter to the ceiling, and allows the attendant enough room to kneel beside the patient and to use maximal body weight in performing cardiac compression.

#### PART B. AMBULANCE EQUIPMENT

1. General Equipment. All ambulances must carry the equipment described in the Minimum Equipment List for Ambulances, 1967, as recommended by the American College of Surgeons, or equipment which is equivalent.
2. American College of Surgeons Minimum Equipment List for Ambulances, 1967;
  - (1) Hinged half-ring lower extremity splint with webbing ankle hitch.
  - (2) Two or more padded boards 4½ feet long by 3 inches wide, and two or more similar padded boards 3 feet long by 3 inches wide, of material comparable to four-ply wood, for coaption splinting of fracture of leg or thigh.
  - (3) Two or more padded 15-inch by 3-inch wood or cardboard splints for fractures of the forearm.
  - (4) Short and long spine boards with accessories.
  - (5) Oxygen tanks and masks of assorted sizes.
  - (6) Hand-operated bag-mask resuscitation unit with adult-, child- and infant-size masks, a unit which can be attached to oxygen supply being preferred.
  - (7) Simple suction apparatus with catheter.
  - (8) Mouth-to-mouth, two-way resuscitation airways for adults and children.
  - (9) Oropharyngeal airways.
  - (10) Mouth gags made of three tongue blades taped together and padded.
  - (11) Universal dressing, approximately 10 inches by 36 inches, packaged folded to 10 inches by 9 inches.
  - (12) Sterile gauze pads.
  - (13) One-, 2- and 3-inch adhesive tape on cylinder.



- (14) Six-inch by 5-yard soft roller-type bandages.
  - (15) Triangular bandages.
  - (16) Safety pins, large size.
  - (17) Shears for bandages.
  - (18) Several pillows.
3. Mobile Communications. Effective as of January 1, 1973, all ambulance services must have two-way mobile communication equipment capable of operating at least within the normal emergency service area. On all new radio equipment secured after January 1, 1973, all radio frequencies shall be compatible with the Montana Emergency Medical Services Plan.

### SECTION III. PERSONNEL

#### PART A. LEVELS OF TRAINING

- 1. Persons to be Trained. All personnel operating an ambulance service, including ambulance attendants and ambulance drivers must be trained.
- 2. Training Requirements. Effective April 1, 1972, all ambulance personnel must be trained, and hold current certification at the level of Advanced American Red Cross First Aid or its equivalent.

#### PART B. NUMBER OF PERSONNEL

- 1. Number Required. Effective April 1, 1972, there must be at least one attendant in addition to the driver on every ambulance call.

### SECTION IV. MAINTENANCE AND OPERATIONS

#### PART A. MAINTENANCE

- 1. Vehicle. Effective April 1, 1972, it is required that reasonable maintenance of all ambulance vehicles be maintained and that records be kept to demonstrate such maintenance has been accomplished.
- 2. Sanitation. A level of sanitation, which is suitable for the transportation of patients from the standpoint of health and safety, must be maintained.

#### PART B. OPERATIONS

- 1. Records. Effective April 1, 1972, in addition to the information supplied for licensing, all ambulance services must keep trip reports on each patient, and make available for inspection such reports,



stating the name of attendants, type of emergency, response time, type of injury and type of first aid administered on each emergency.

2. Access to Premises. All persons authorized by this act or by regulations adopted under this act shall have free access at all reasonable hours to any of the establishments licensed for the purpose of determining compliance of this act.

## SECTION V. REQUIREMENTS - STATE AND LOCAL ORDINANCES

### PART A. ORDINANCES

1. State and Local Ordinances. All ambulances and ambulance services must comply with all state and local laws concerning the operation of ambulances and ambulance services.

## SECTION VI. INSURANCE

### PART A. INSURANCE

1. Insurance. Effective April 1, 1972, all ambulance services will be properly covered by liability insurance with a minimum coverage of not less than \$100,000.00, \$300,000.00, \$25,000.00.



## I. LAWS

## CHAPTER 36--COUNTY AND MUNICIPAL AMBULANCE SERVICE

Section 69-3601. Establishment of service authorized-costs-petition.

69-3601. Establishment of service authorized-costs-petition. A county, city or town, acting through its governing body, may establish and maintain an ambulance service for such county, city or town. Any county, city or town may contract with any county, city or town to establish and maintain a joint ambulance service and to share the costs, such costs to be apportioned according to the benefits to accrue, the proportion to be paid by each to be fixed in advance by joint resolution by the respective governing bodies, if the governing body has received a petition signed by fifteen per centum (15%) of the electors registered to vote in the county, city or town at the last preceding general election, or in each of the counties, cities or towns wherein a joint ambulance service is being established. In addition to all other levies authorized by law, each county, city or town may levy an annual tax up to one (1) mill on the dollar of the taxable value of all taxable property within the county, city or town to defray the costs incurred in providing ambulance service.

History: En. Sec. 1, Ch. 238, L. 1961; amd. Sec. 1, Ch. 162, L. 1967.

## Amendments

The 1967 amendment ended the first sentence after "city or town"; substituted "Any county, city or town may contract with any county" for "and it may also contract with another county" after "county or town" to begin the second sentence; and substituted the passage beginning "fifteen per centum (15%) of the electors" after "signed by" to the end of this section for "fifty per centum (50%) of the taxpayers who are listed on the last-completed assessment roll."

## Effective Date

Section 2 of Ch. 162, Laws 1967 provided the act should be in effect from and after its passage and approval. Approved February 27, 1967.



THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

REPORT OF THE

COMMISSIONER OF THE

GEOLOGICAL SURVEY

OF THE

UNITED STATES

FOR THE YEAR

1881

BY

JOHN W. COVILLE,

COMMISSIONER.

CHICAGO:

PUBLISHED BY THE

UNIVERSITY OF CHICAGO PRESS,

1882.

STATE OF MONTANA  
OFFICE OF THE ATTORNEY GENERAL  
HELENA 59601

December 14, 1971

ROBERT L. WOODAHL  
ATTORNEY GENERAL

Mrs. Gertrude Malone, R.N.  
Executive Secretary  
Montana Board of Nursing  
601 North Davis Street  
Helena, Montana 59601

Dear Mrs. Malone:

This is in reply to your inquiry as to the meaning of "administration of medications" as defined in the Nurse Practice Act, Title 66, Chapter 12, Revised Codes of Montana, 1947.

Section 66-1222, R.C.M. 1947, provides in part as follows:

"...The practice of nursing embraces two classes of nursing service and activity, defined, respectively, as follows:

"(1) The practice of professional nursing means the performance for compensation of any act in the observation, care and counsel of the ill, injured or infirm, or in the maintenance of health or prevention of illness of others, or in the supervision and teaching of other personnel, or the administration of medications and treatments as prescribed by a person licensed in this state to prescribe such medications and treatments; requiring substantial specialized judgment and skill and based on knowledge and application of the principles of biological, physical and social science. The foregoing shall not be deemed to include acts of diagnosis or prescription of therapeutic or corrective measures.

"(2) The practice of practical nursing means the performance for compensation in the care of the ill, injured or infirm, of acts selected by and performed under the direction of an R.N., or a person licensed in this state to prescribe such medications and treatments; and not requiring the substantial specialized skill, judgment and knowledge required in professional nursing."

Section 66-1243, R.C.M. 1947, provides in part as follows:

"It shall be a misdemeanor for any person including any corporation, association or individual to:

\* \* \*



"(3) Practice professional nursing as defined by this act unless duly licensed to do so under the provisions of this act;

"(4) Practice practical nursing as defined by this act unless duly licensed to do so under the provisions of this act; ..."

In view of the above, it is my opinion that only professional nurses are duly licensed to administer medications and treatments and that licensed practical nurses are duly licensed to administer such medications and treatments as may be delegated to the licensed practical nurse by the professional nurse or by a person licensed to prescribe medications and treatments as long as this delegated act does not require the specialized skill, judgment, and knowledge required in professional nursing.

The primary definition of "administer" is to give. It is a word in general use with a common and accepted meaning; and, where a person is charged with administering medicine, it is the same as charging him with giving medicine. *Chandler v. State*, 105 p. 375, 3 Okl. Cr. 254. "Administer" as used in a statute proscribing the administering of poison with intent to kill means more than to prescribe or furnish, it must include giving. *People v. Geither*, 343 P.2d 799, 173 C.A.2d 662.

In view of the above, it is my opinion the words "administration of medications" as used in the above sections refer to the actual giving of a medication or a treatment to a patient. Such wording should not be interpreted to include the delegation of the medication procedure or a specific treatment by a professional nurse to a person not licensed to perform nursing function in this state. In my opinion, if such a non-licensed person performed such services, he would be in violation of section 66-1243, *supra*.

Very truly yours,

s/Robert L. Woodahl  
ROBERT L. WOODAHL  
Attorney General

RLW:ds

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

THE STUDY OF THE KINETICS OF THE REACTION OF  
HYDROGEN PEROXIDE WITH FERROUS SULFATE IN  
ACIDIC SOLUTIONS

BY  
J. H. KINZIE AND  
R. W. COLE

RECEIVED JANUARY 15, 1954

CHICAGO, ILLINOIS

1954

CHICAGO, ILLINOIS

1954

STATE OF MONTANA  
OFFICE OF THE ATTORNEY GENERAL  
HELENA 59601

July 19, 1972

ROBERT L. WOODAHL  
ATTORNEY GENERAL

Mrs. Gertrude Malone, R.N.  
Executive Secretary  
Montana State Board of Nursing  
601 North Davis  
Helena, Montana 59601

Dear Mrs. Malone:

In response to your inquiry concerning who may or may not perform venipunctures, I have just completed my study of your questions. You first asked:

"In the event that the state board of nursing would like to have an attorney general's opinion changed, what is the proper procedure to accomplish this end?"

An attorney general's opinion is an interpretation of existing law. Generally, an opinion stands until the statutory provisions interpreted have been amended. I would suggest that if the result of the opinion is to be changed, legislation be introduced to amend the statutory provisions interpreted by the opinion.

Your next question relates to the applicability of 26, Opinions of the Attorney General, 89, in relation to whether medical emergency technicians are allowed to do venipuncture. There are no provisions in the statutes in regard to medical emergency technicians. As you know, subsections (1) and (2) of section 66-122, R.C.M. 1947, define the practice of professional nursing and practical nursing. As stated in 26, Opinions of the Attorney General, 89, intervenous treatment given by a professional nurse upon order of a doctor of medicine is not practicing medicine, but rather in the purview of professional nursing. However, medical emergency technicians are not professional nurses and I find no authority under the above opinion, or the laws of Montana, allowing medical emergency technicians to perform venipunctures.

I hope the above information answers your questions. If I may be of further service to you, please let me know.

Very truly yours,

s/Robert L. Woodahl

ROBERT L. WOODAHL  
Attorney General

RLW:sjb





Provided here are the Revised Codes of Montana which relate to emergency health care. Due to the length of the codes, only those of special interest are provided in full text. The remainder are listed by RCM title and code number.

RCM 24-128. Protective devices.

RCM 75-7003. School bus driver qualifications:

Any driver of a school bus shall be qualified to drive such school bus by compliance with the following requirements:

- (1) he is not less than twenty-one (21) years of age;
- (2) he is of good moral character;
- (3) he is the holder of a chauffeur's license;
- (4) he has filed with the district a satisfactory medical examination report signed by a licensed physician of the State of Montana on a blank provided by the superintendent of public instruction;
- (5) he has completed a standard first-aid course and holds a valid standard first-aid certificate from an authorized instructor. The issuance of such certificate shall be governed by rules and regulations established by the superintendent of public instruction, provided that such rules may suspend this requirement for a reasonable period of time where there has been an inadequate opportunity for securing the first-aid course and certificate;
- (6) he has complied with any other qualifications established by the board of education; and
- (7) he has filed with the county superintendent a certificate from the trustees of the district for which the school bus is to be driven certifying compliance with the several driver qualifications enumerated in this section.

RCM 92-612. Liability for treatment of malpractice in case of hospital service.

### Disasters

RCM 11-3266. Department of Public Safety--police and fire departments.

RCM 11-4301. Definitions. An emergency shall be:

RCM 11-4304. Council's resolutions--inclusion of facts of disaster.

RCM 11-4305. Estimation of expenses and levying of tax.

RCM 11-4306. Emergency tax surplus.

RCM 77-107. Governor may order and organize militia.

RCM 77-151. Claims against National Guard appropriations.

RCM 77-1302. Policy and purpose.

RCM 77-1303. Definitions (Civil Defense).



RCM 77-1307. Duties of director.

RCM 77-1308. Mutual-aid arrangements.

RCM 77-1309. Local organization for Civil Defense.

RCM 77-1401. Short title.

RCM 77-1402. Governor authorized to join in the interstate civil defense and disaster compact.

RCM 77-1403. Form of compact.

RCM 77-1506. Proclamation of emergency--governor's powers during emergency.

RCM 77-1404. Governor authorized to execute supplemented agreements.

RCM 77-1502. Legislative findings--policy of state.

RCM 77-1503. Definition of terms (emergency).

RCM 77-1504. State emergency resource planning.

RCM 77-1505. Governor's powers and duties under act.  
Committee--composition.

RCM 77-1507. Judicial inquiry as to emergency proclamation and facts.

RCM 79-2501. Governor may authorize expenditure in case of emergency or disaster.

### Emergency Vehicles

RCM 31-118. Definitions. The following words and phrases when used in this act shall, for the purpose of this act, have the meanings respectively ascribed to them in sections 31-119 to 31-124.

RCM 31-119. Vehicle-motor vehicle-farm tractor-school bus.  
(b) Motor vehicle. Every vehicle which is self-propelled and every vehicle which is propelled by electric power obtained from overhead trolley wires, but not operated on rails.

RCM 31-120. Person-operator-chauffer-owner. (c) Chauffer. Every person who is employed by another for the principal purpose of driving a motor vehicle and every person who drives a school bus transporting school children or any motor vehicle when in use for the transportation of persons or property for compensation, but shall not include persons driving farm trucks or hauling farm products for producers of said farm products.



RCM 31-125. Operators and chauffers must be licensed. (a) No person, except those hereinafter expressly exempted, under section 31-125, shall drive any motor vehicle upon a highway in this state unless such person has a valid Montana license as an operator or chauffer under the provisions of this act. -----

RCM 31-127. What persons shall not be licensed. The board shall not issue any license hereunder:

2. To any person, as a chauffer, employed by another for the principal purpose of driving a motor vehicle when in use exclusively for the transportation of property for compensation, who is under the age of eighteen (18) years, nor any person, as a chauffer, who is employed by another for the principal purpose of driving a motor vehicle transporting passengers for hire or transporting school children, who is under the age of twenty-one (21) years; -----

RCM 32-2102. Definitions -----authorized emergency vehicle-----  
(e) Authorized Emergency Vehicle. Vehicles of the fire department, fire patrol, police vehicles, and such ambulances and emergency vehicles of municipal departments or public service corporations or of persons as are designated or authorized by the board.

RCM 32-2128. Authorized emergency vehicles. (a) The driver of an authorized emergency vehicle, when responding to an emergency call or when in the pursuit of an actual or suspected violator of the law or when responding to but not returning from a fire alarm, may exercise the privileges set forth in this section, but subject to the conditions herein stated. (b) The driver of an authorized emergency vehicle may:

1. Park or stand, irrespective of the provisions of this act;
2. Proceed past a red or stop signal or stop sign, but only after slowing down as may be necessary for safe operation;
3. Exceed the speed limits so long as he does not endanger life or property;
4. Disregard regulations governing direction of movement or turning in specified directions.

(c) The exemptions herein granted to an authorized emergency vehicle shall apply only when such vehicle is making use of audible and visual signals meeting the requirements of section 129 (32-21-132) of this act, except that an authorized emergency vehicle operated as a police vehicle need not be equipped with or display a red light visible from in front of the vehicle. (d) The foregoing provisions shall not relieve the driver of an authorized emergency vehicle from the duty to drive with due regard for the safety of all persons, nor shall such provisions protect the driver from the consequences of his reckless disregard for the safety of others.

RCM 32-21-132. Audible and visual signals on vehicles.

(a) Every authorized emergency vehicle shall, in addition to any other equipment and distinctive markings required by this act, be equipped with a siren, exhaust whistle or bell capable of giving an audible signal. (b) Every authorized emergency vehicle shall, in addition to any other equipment and distinctive markings required by this act, be equipped with signal lamps mounted as high and as widely spaced laterally as practicable, displaying to the front two (2) alternately flashing red lights located at the same level and to the rear two (2) alternately flashing red lights located at the same level, and these lights shall





have sufficient intensity to be visible at five hundred (500) feet in normal sunlight.

RCM 32-21-145. Horns and warning devices. (b) No vehicle shall be equipped with nor shall any person use upon a vehicle any siren, whistle, or bell, except as otherwise permitted in this section.

(d) Any authorized emergency vehicle may be equipped with a siren, whistle, or bell, capable of emitting sound audible under normal conditions from a distance of not less than five hundred (500) feet and of a type approved by the board, but such siren shall not be used except when such vehicle is operated in response to an emergency call or in the immediate pursuit of an actual or suspected violator of the law, in which said latter events the driver of such vehicle shall sound said siren when reasonably necessary to warn pedestrians and other drivers of the approach thereof.

RCM 32-21-75. Operation of vehicles on approach of authorized emergency vehicles. (a) Upon the immediate approach of an authorized emergency vehicle making use of audible and visual signals meeting the requirements of section 129 (32-21-132) of this act, or of a police vehicle properly and lawfully making use of an audible signal only, the driver of every other vehicle shall yield the right of way and shall immediately drive to a position parallel to, and as close as possible to, the right-hand edge or curb of the roadway clear of any intersection and shall stop and remain in such position until the authorized emergency vehicle has passed, except when otherwise directed by a police officer or highway patrolman. (b) This section shall not operate to relieve the driver of an authorized emergency vehicle from the duty to drive with due regard for the safety of all persons using the highway.

#### Public Access

RCM 94-35-221.1. Failure to relinquish party line telephone for emergency call--penalty.

RCM 94-35-221.2. Lack of knowledge as defense--emergency as defense.

RCM 94-35-221.3. False pretext of emergency--penalty.

#### Good Samaritan Act

RCM 17-410. Emergency care rendered at scene of accidents. Any person licensed as a physician and surgeon under the laws of the state of Montana, or any other person, who in good faith renders emergency care or assistance, without compensation, at the scene of an emergency or accident, shall not be liable for any civil damages for acts or omissions other than damages occasioned by gross negligence or by willful or wanton acts or omissions by such person in rendering such emergency care.

#### Stopping at the Scene of a Vehicle Accident

RCM 94-35-269. ". . . Who knowingly fails to give assistance to a person who he has injured shall be guilty of a misdemeanor."

Note: Persons are required to stop only if they have been involved in the accident.



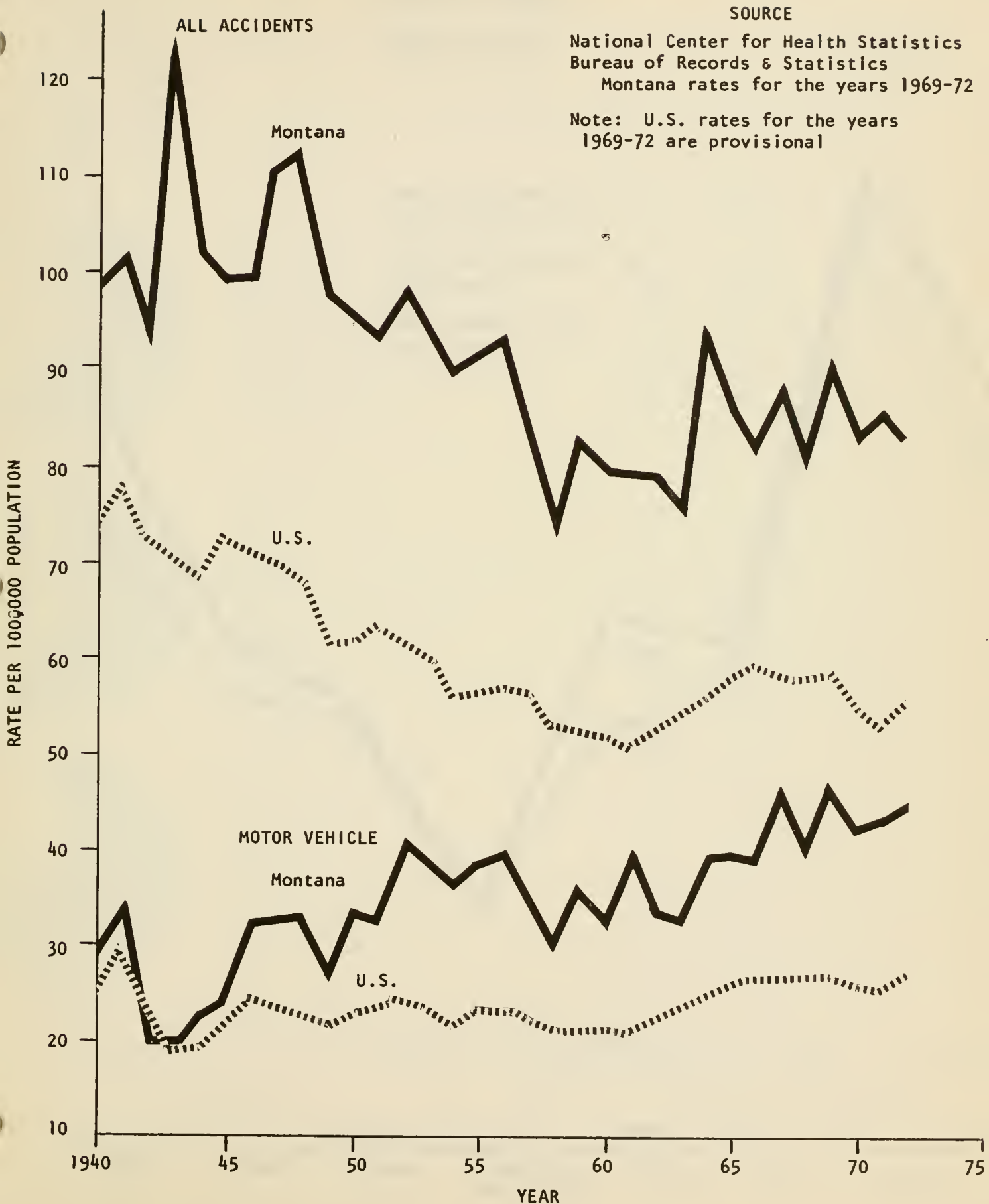


# ACCIDENTAL DEATH RATES: U.S. & MONTANA, 1940-72 BY PLACE OF RESIDENCE

## SOURCE

National Center for Health Statistics  
Bureau of Records & Statistics  
Montana rates for the years 1969-72

Note: U.S. rates for the years  
1969-72 are provisional

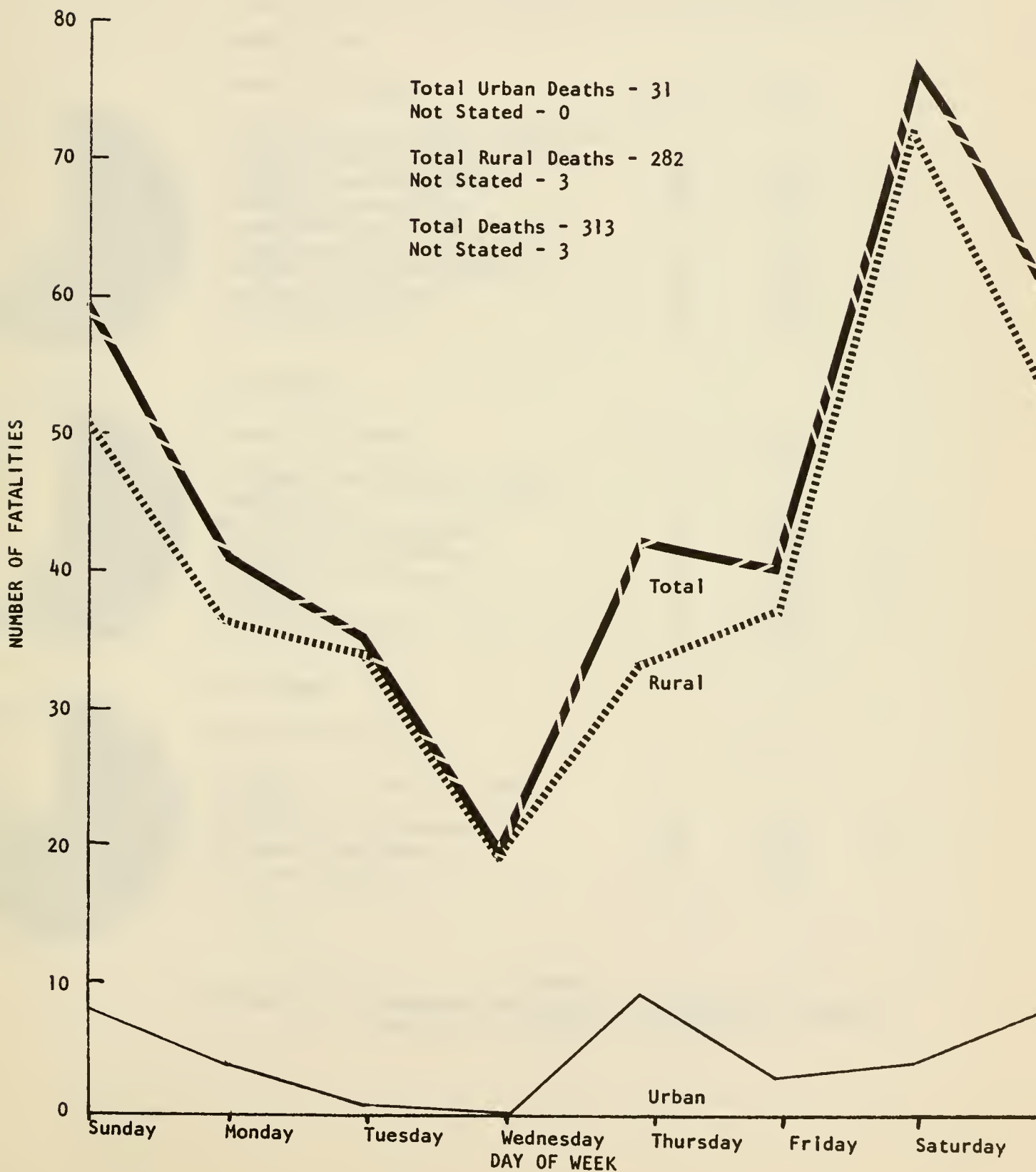




TOTAL STATEWIDE MOTOR VEHICLE ACCIDENT DEATHS  
BY DAY OF WEEK  
1/1/72 - 12/31/72

RURAL AND URBAN

EMS BUREAU  
1973





**IMPORTANT CAUSES OF DEATH BY AGE GROUP**  
**Montana, 1971**  
**(By place of residence)**

CAUSE OF DEATH	No.	Percent	Rank Order
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**UNDER 1 YEAR**

Total, All Causes	267	100.0	
Birth injury, difficult labor and other hypoxic & anoxic conditions	83	31.1	1
Congenital malformations	42	15.7	2
Immaturity unqualified	40	15.0	3
Other diseases of early infancy (exclusive of infections)	22	8.2	4
VIOLENT & ACCIDENTAL DEATHS	17	6.4	5
Pneumonia, all forms	16	6.0	6
All other causes	47	17.6	

**1-4 YEARS**

Total, All Causes	50	100.0	
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	18	36.0	1
MOTOR VEHICLE ACCIDENTS	7	14.0	2
Congenital malformations	5	10.0	3
Pneumonia, all forms	4	8.0	4
HOMICIDE	4	8.0	4
All other causes	12	24.0	

**5-14 YEARS**

Total, All Causes	74	100.0	
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	26	35.1	1
MOTOR VEHICLE ACCIDENTS	24	32.4	2
Malignant neoplasms	10	13.5	3
All other causes	14	18.9	

**SOURCE**

MONTANA STATE DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES  
 BUREAU OF RECORDS & STATISTICS





IMPORTANT CAUSES OF DEATH BY AGE GROUP  
Montana, 1971  
(By place of residence)

CAUSE OF DEATH	No.	Percent	Rank Order
<b>15-24 YEARS</b>			
Total, All Causes	213	100.0	
MOTOR VEHICLE ACCIDENTS	99	46.5	1
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	38	17.8	2
SUICIDES	22	10.3	3
Malignant neoplasms	10	4.7	4
Injury undetermined whether accidents or purposely inflicted	10	4.7	4
HOMICIDES	8	3.8	5
All other causes	26	12.2	
<b>25-34 YEARS</b>			
Total, All Causes	162	100.0	
MOTOR VEHICLE ACCIDENTS	42	25.9	1
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	26	16.0	2
Malignant neoplasms	16	9.9	3
SUICIDES	16	9.9	3
HOMICIDES	11	6.8	4
INJURY UNDETERMINED WHETHER ACCIDENTS OR PURPOSELY INFLICTED	9	5.6	5
All other causes	42	25.9	
<b>35-44 YEARS</b>			
Total, All Causes			
HEART DISEASES	51	19.8	1
Malignant neoplasms	44	17.1	2
MOTOR VEHICLE ACCIDENTS	33	12.8	3
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	30	11.7	4
SUICIDES	17	6.6	5
Cerebrovascular disease	14	5.4	6
All other causes	68	26.5	

## SOURCE

MONTANA STATE DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES  
BUREAU OF RECORDS & STATISTICS



IMPORTANT CAUSES OF DEATH BY AGE GROUP  
Montana, 1971  
(By place of residence)

CAUSE OF DEATH	No.	Percent	Rank Order
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#### 45-54 YEARS

Total, All Causes	540	100.0	
HEART DISEASES	145	26.9	1
Malignant neoplasms	126	23.3	2
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	38	7.0	3
MOTOR VEHICLE ACCIDENTS	31	5.7	4
SUICIDES	27	5.0	5
Cerebrovascular disease	23	4.3	6
Cirrhosis of liver	20	3.7	7
All other causes	130	24.1	

#### 55-64 YEARS

Total, All Causes	990	100.0	
HEART DISEASES	394	39.8	1
Malignant neoplasms	215	21.7	2
Cerebrovascular disease	57	5.8	3
Cirrhosis of liver	32	3.2	4
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	29	2.9	5
Bronchitis, emphysema & asthma	28	2.8	6
MOTOR VEHICLE ACCIDENTS	27	2.7	7
SUICIDES	22	2.2	8
All other causes	186	18.8	

#### 65 AND OVER

Total, All Causes	4,304	100.0	
HEART DISEASES	1,734	40.3	1
Cerebrovascular disease	692	16.1	2
Malignant neoplasms	627	14.6	3
Pneumonia, all forms	153	3.6	4
Arteriosclerosis	150	3.5	5
Bronchitis, emphysema & asthma	106	2.4	6
Diabetes mellitus	93	2.2	7
ACCIDENTS, EXCLUSIVE OF MOTOR VEHICLE	91	2.1	8
All other causes	658	15.3	

#### SOURCE

MONTANA STATE DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES  
BUREAU OF RECORDS & STATISTICS



MONTANA STATEWIDE MOTOR VEHICLE ACCIDENTS  
BY DAY OF WEEK  
1/1/72 - 12/31/72

URBAN AND RURAL

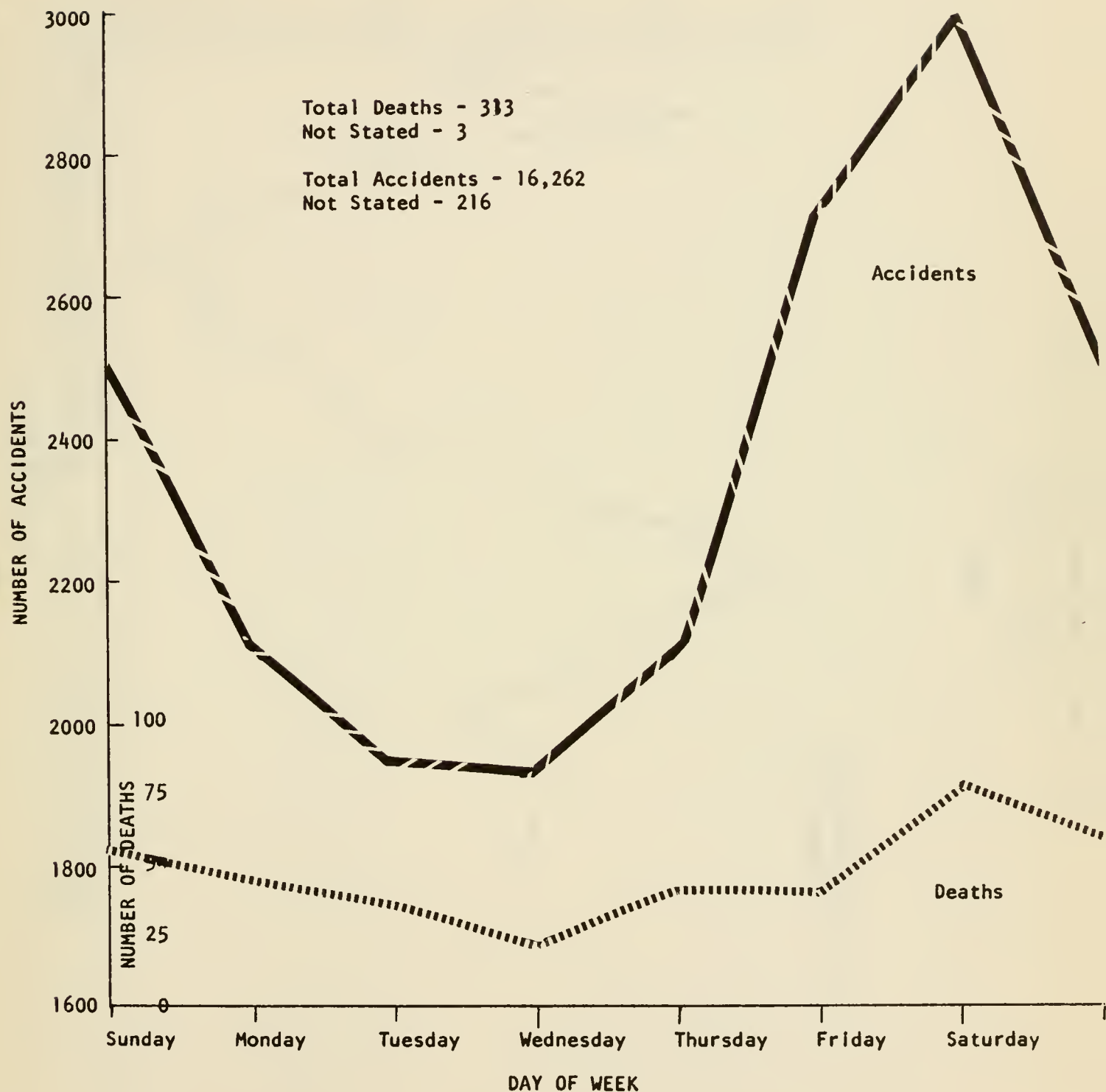
Total Urban Accidents - 7,063  
Not Stated - 102

Total Rural Accidents - 9,199  
Not Stated - 282





TOTAL STATEWIDE MOTOR VEHICLE ACCIDENTS AND DEATHS  
BY DAY OF WEEK  
1/1/72 - 12/31/72





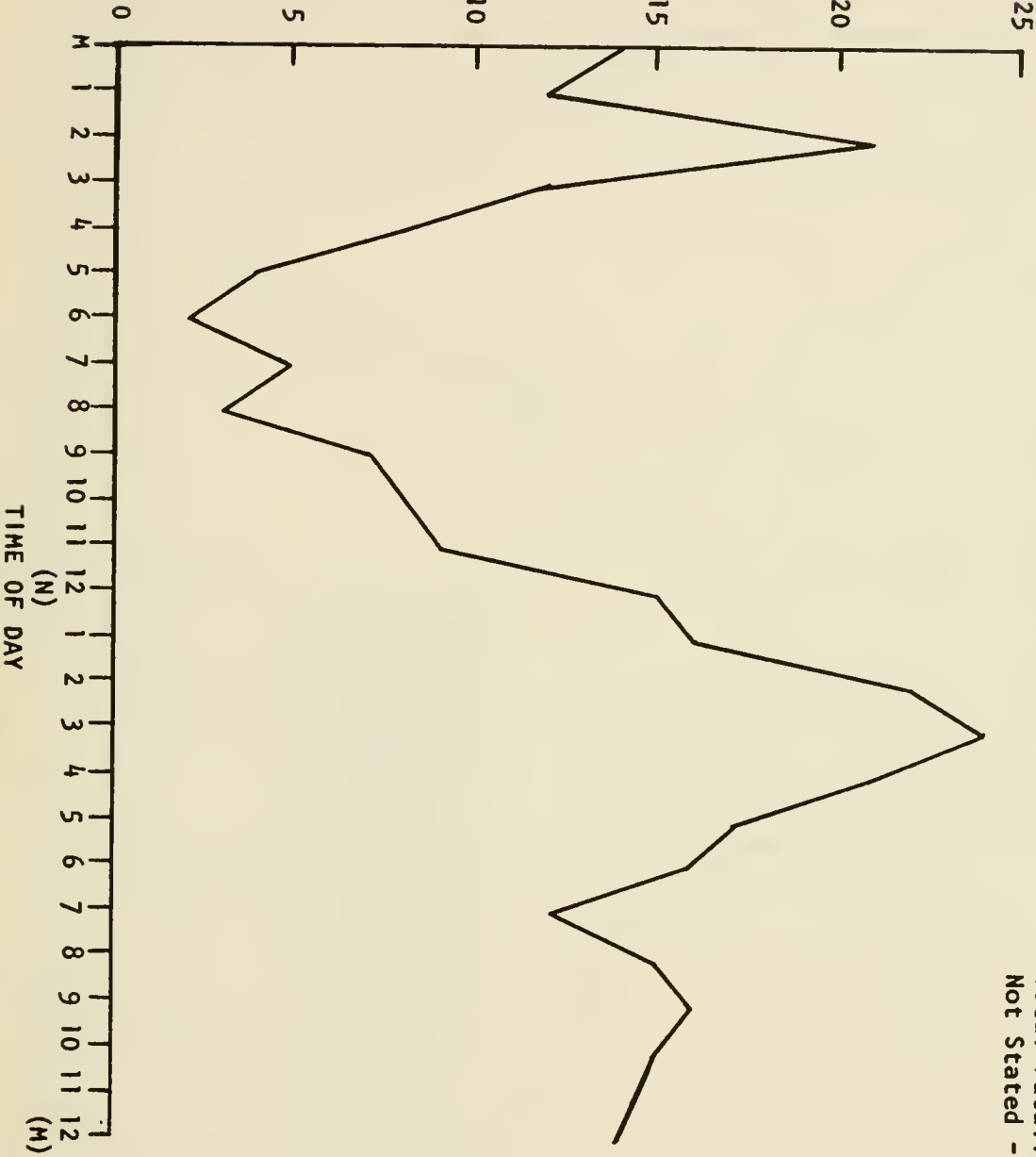


MONTANA STATEWIDE MOTOR VEHICLE FATALITIES  
BY TIME OF DAY  
1/1/72 - 12/31/72

TOTAL

Total Fatalities - 313  
Not Stated - 3

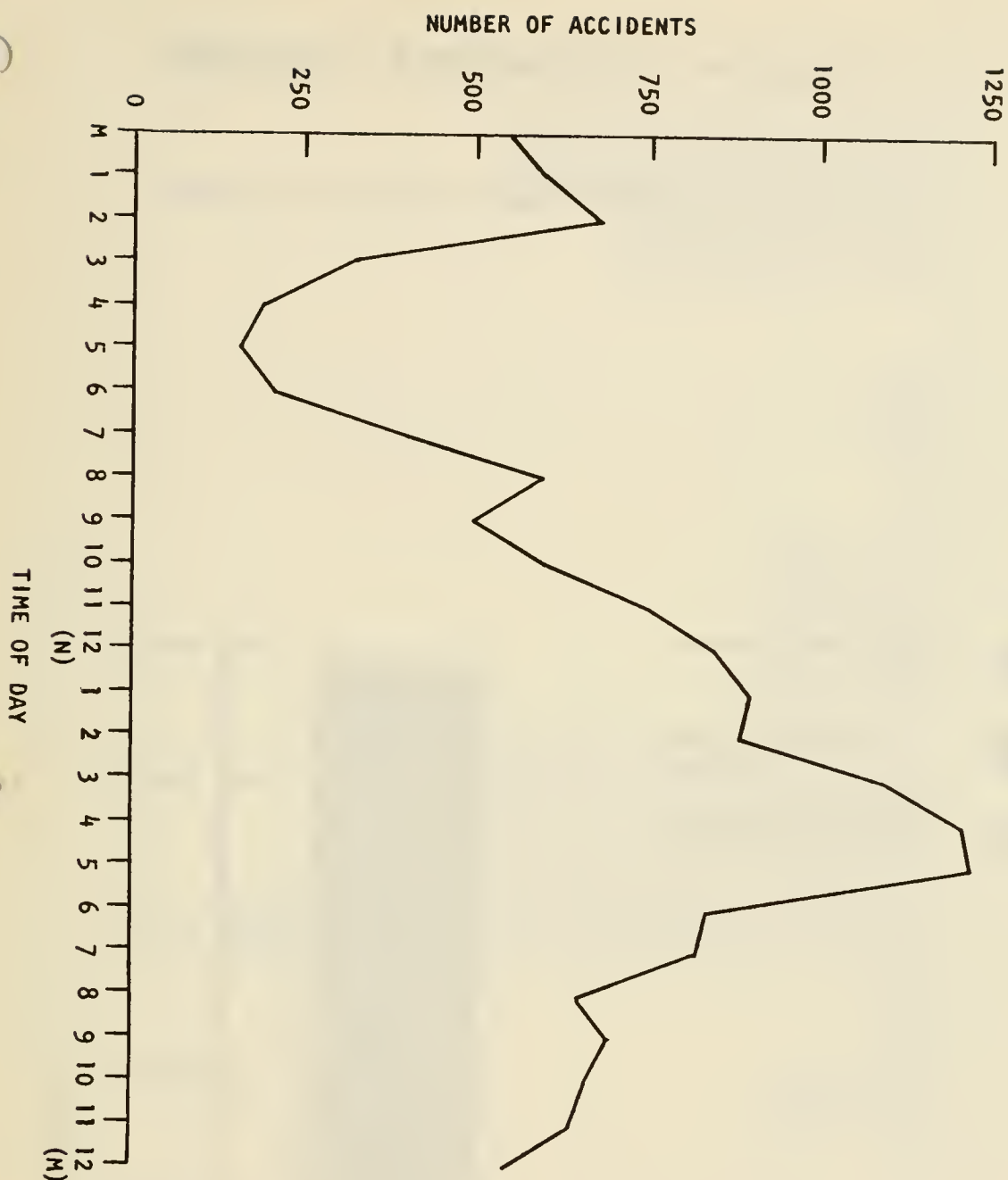
NUMBER OF FATALITIES





TOTAL MONTANA STATEWIDE MOTOR VEHICLE ACCIDENTS  
BY TIME OF DAY  
1/1/72 - 12/31/72

TOTAL

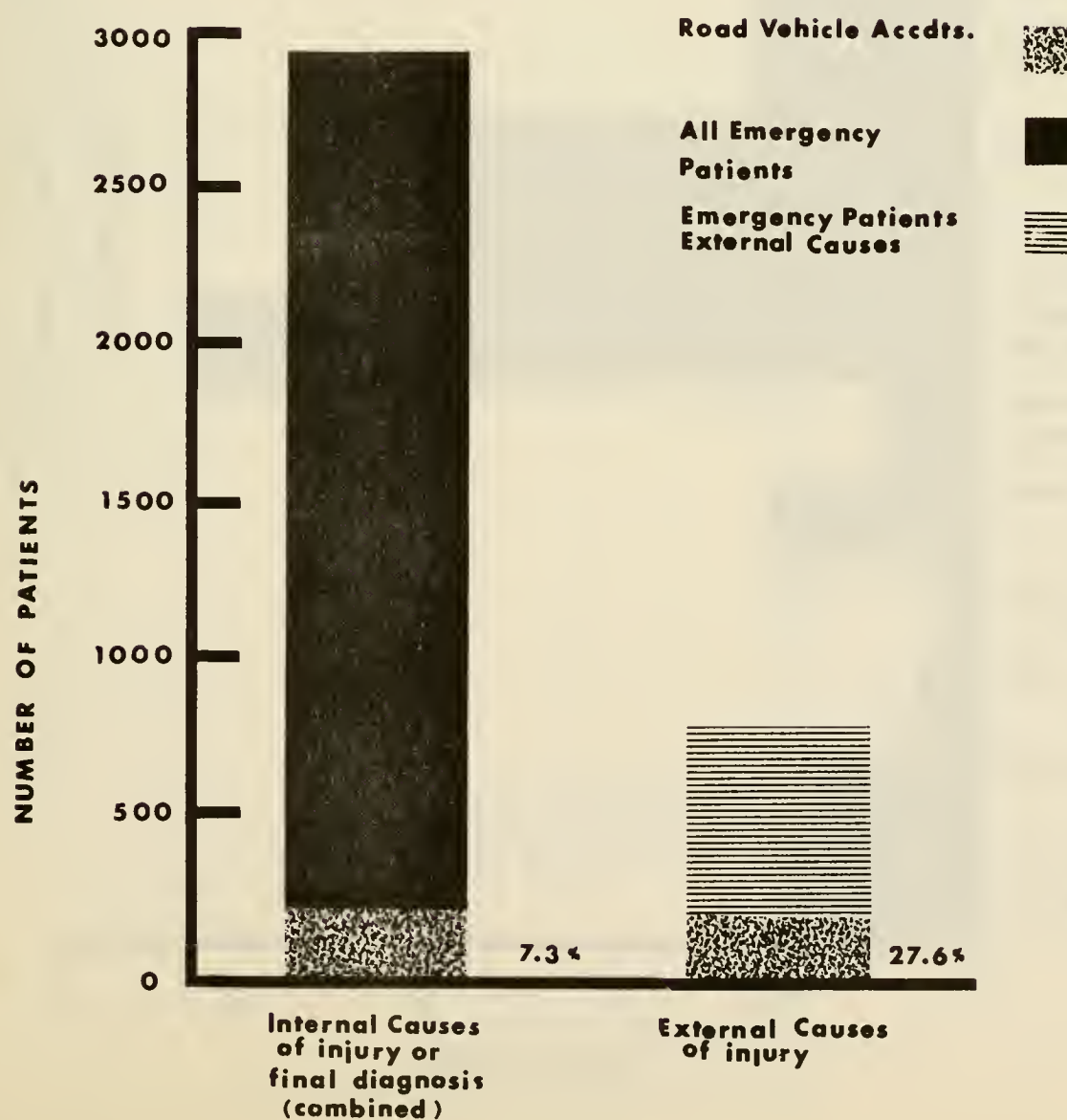


Total Motor Vehicle Accidents-16,262  
Not Stated-216



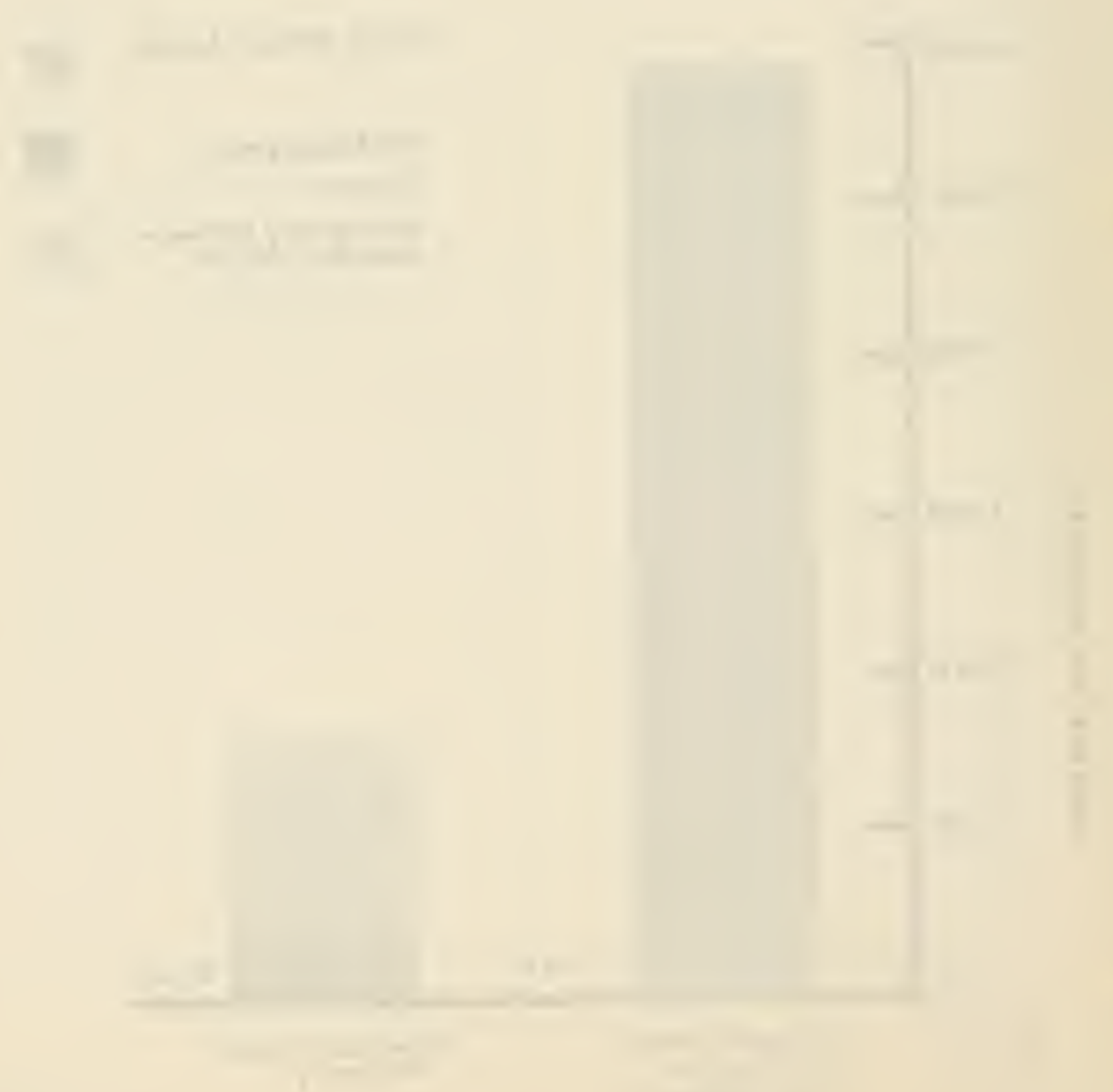
# MONTANA EMERGENCY PATIENTS

MONTANA PATIENT ORIGIN STUDY 1970 - 71



# STUDY ON THE EFFECTS OF ...

(a) ...

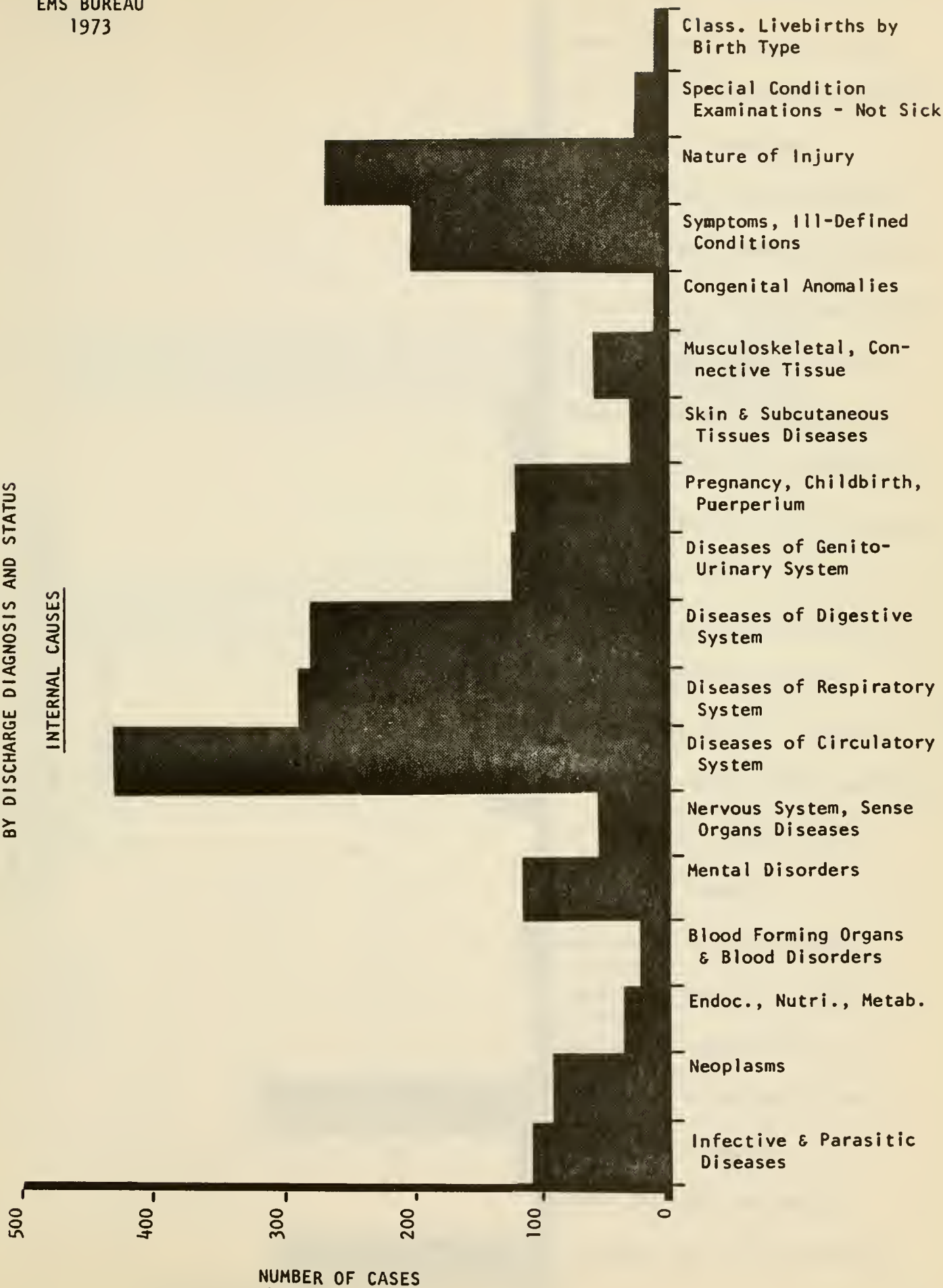




MONTANA PATIENT ORIGIN STUDY 1970-1971  
UTILIZATION OF THE EMERGENCY DEPARTMENT  
BY DISCHARGE DIAGNOSIS AND STATUS

CAUSES OF INJURIES

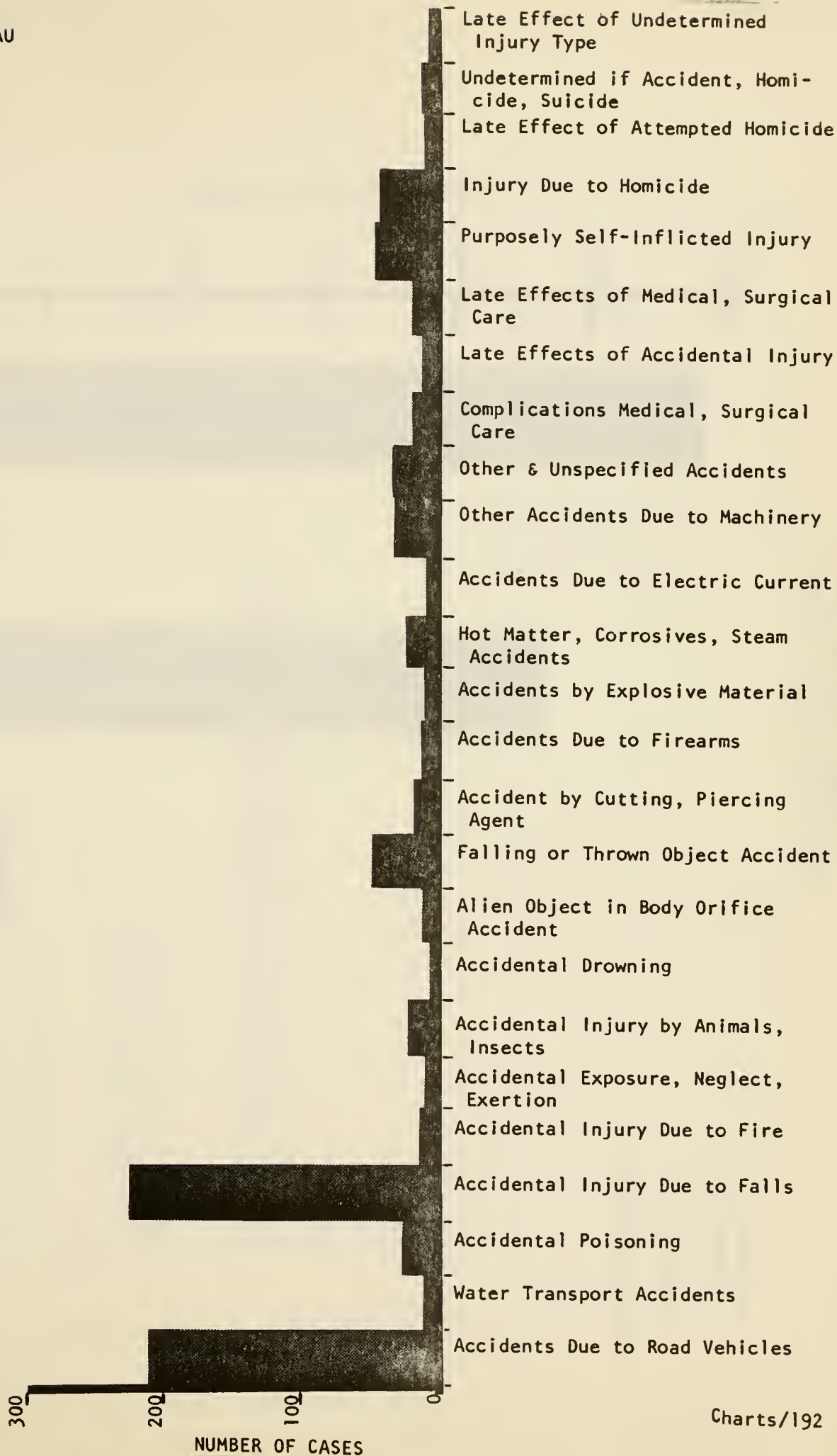
INTERNAL CAUSES

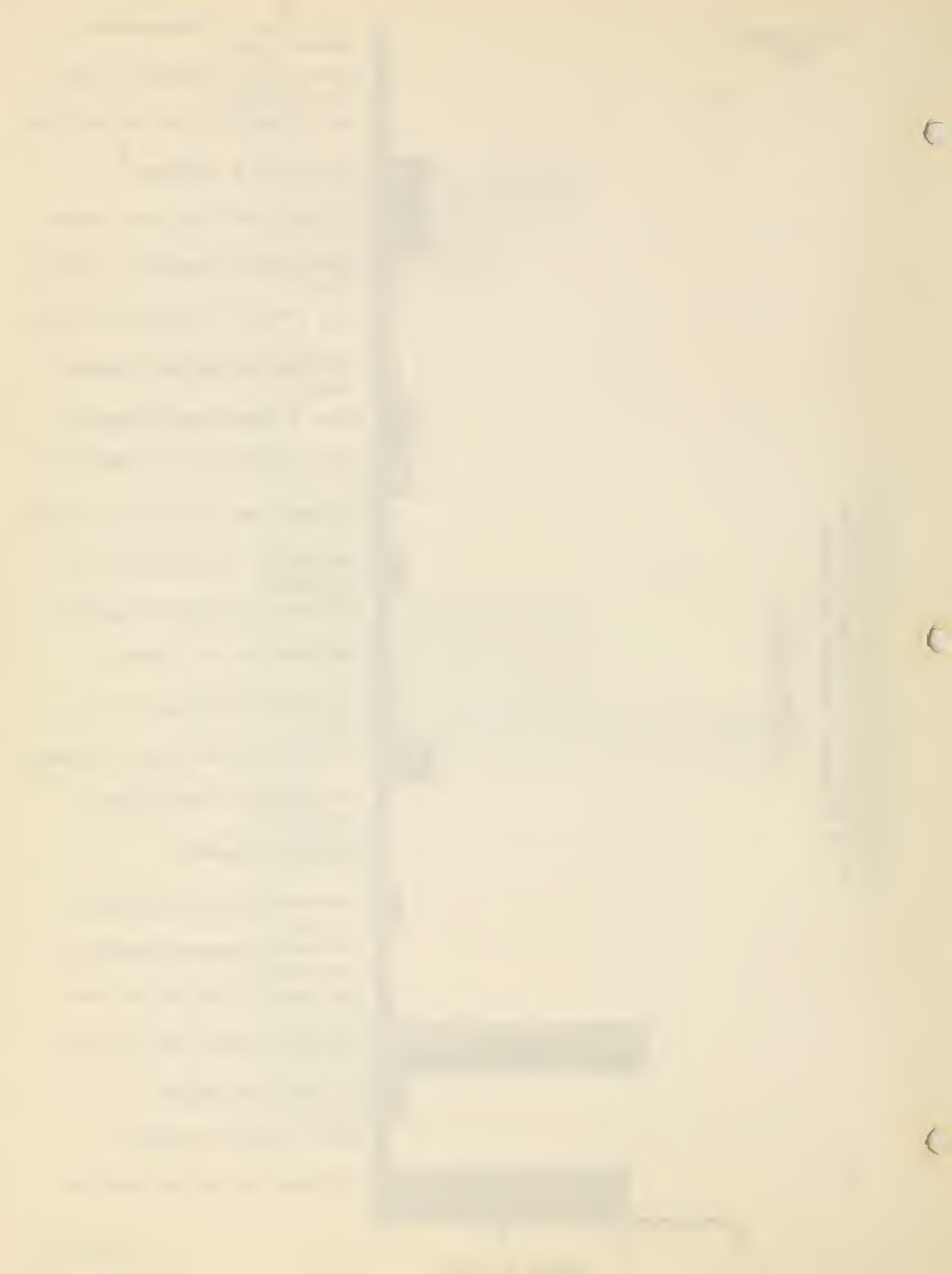




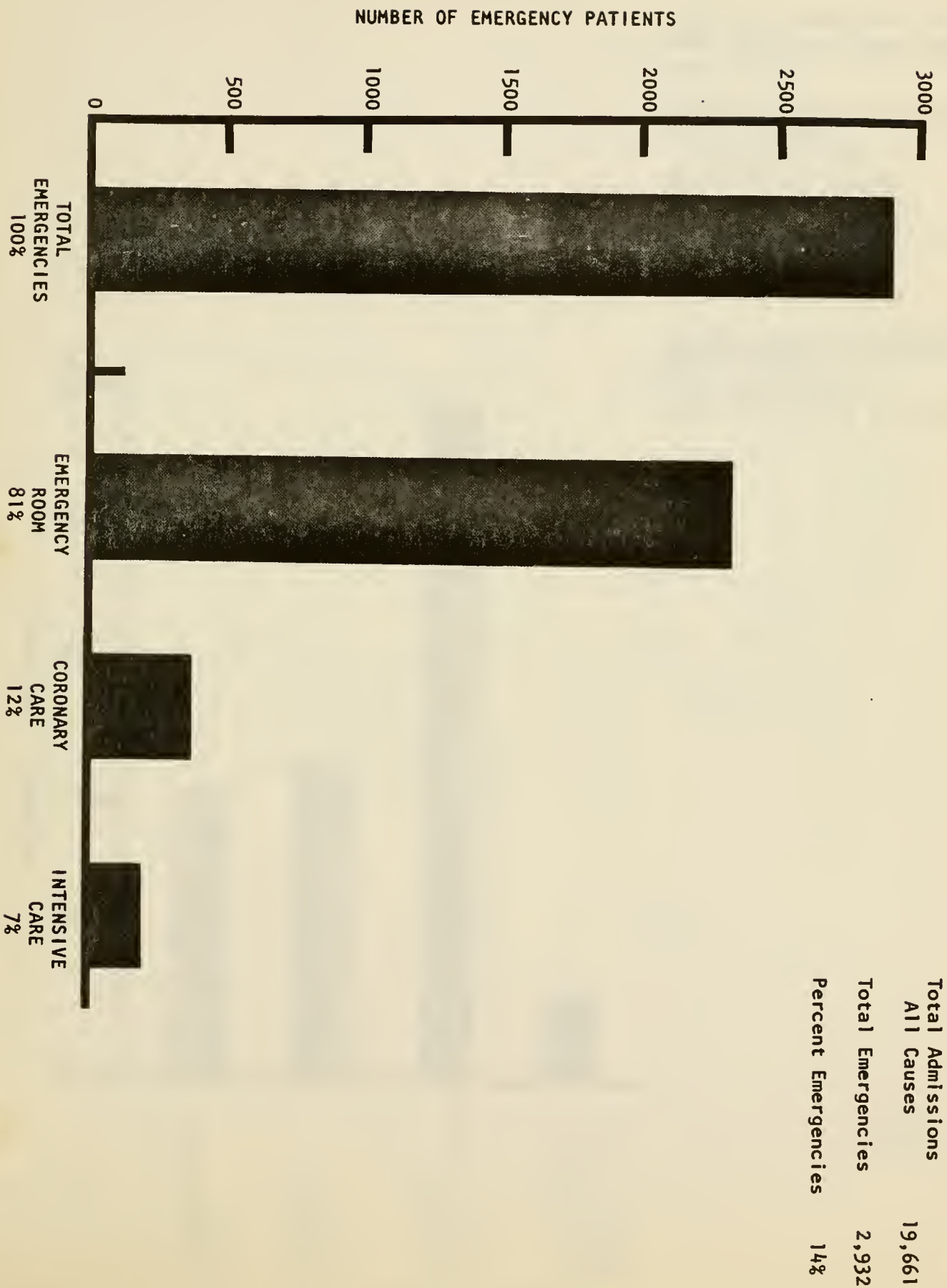
MONTANA PATIENT ORIGIN STUDY 1970-1971  
UTILIZATION OF THE EMERGENCY DEPARTMENT  
BY DISCHARGE DIAGNOSIS AND STATUS

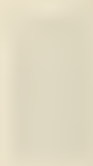
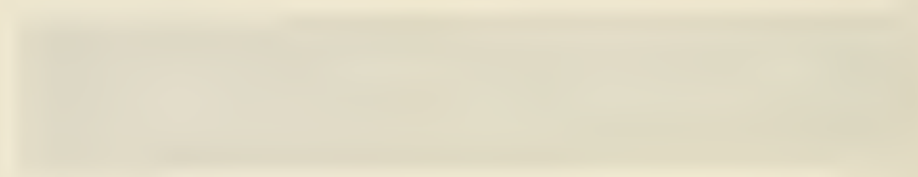
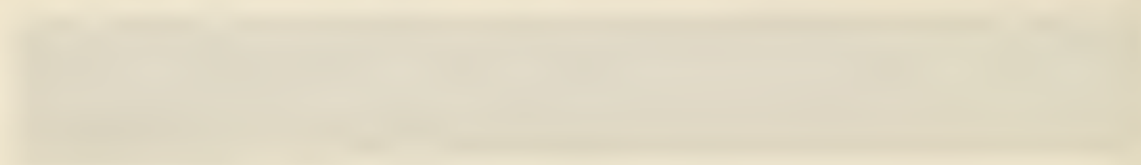
EXTERNAL CAUSES





ADMISSIONS AND PATIENTS  
WITH MEDICAL EMERGENCIES  
MONTANA PATIENT ORIGIN STUDY  
1970-1971







# MONTANA PATIENT ORIGIN STUDY 1970-71

## REFERRAL DATA

6.5% of all emergency patients were referred to other medical facilities.

### Convalescent Home Referrals

72.5% in state

7.5% out of state

20.0% did not respond

### Nursing Home Referrals

35.5% in state

11.1% out of state

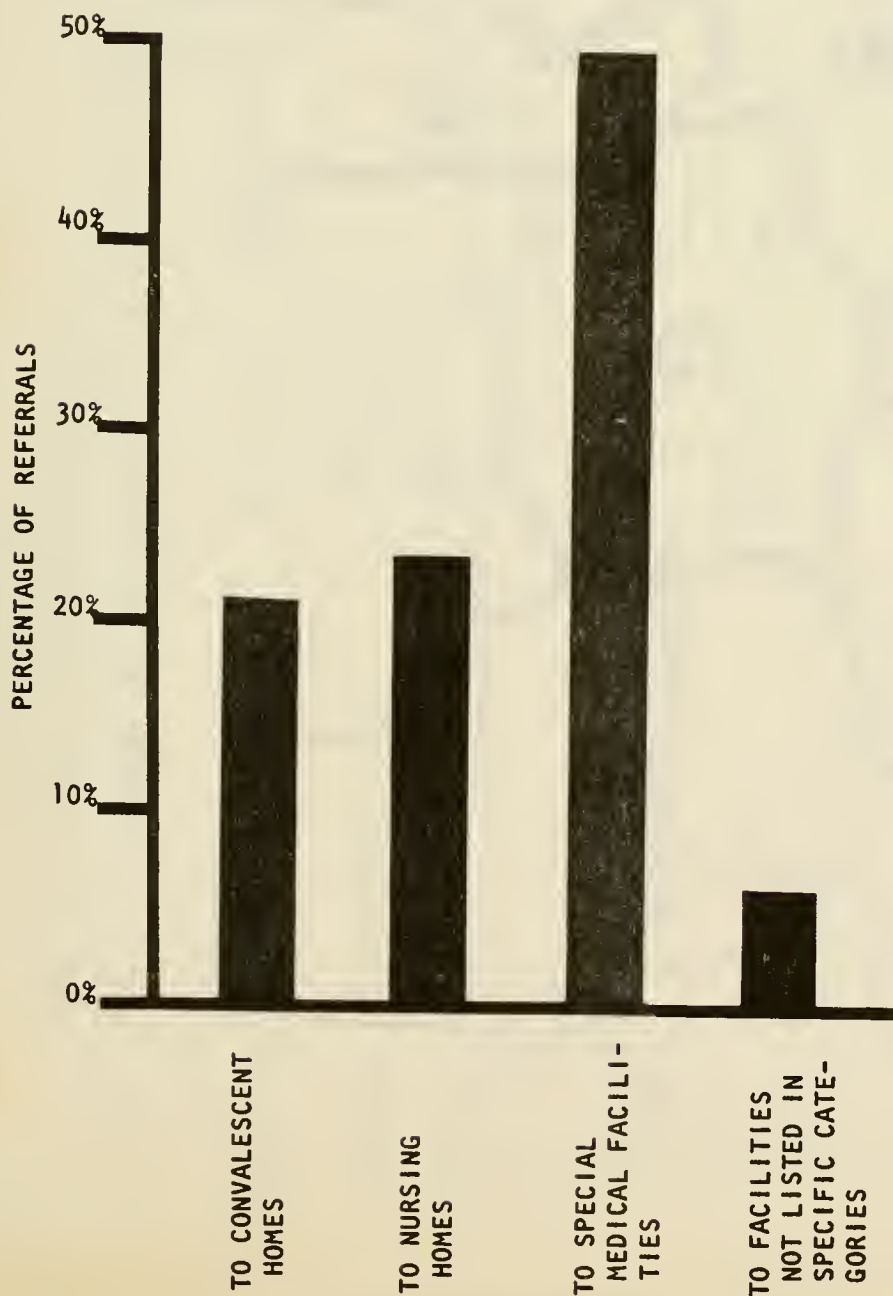
53.3% did not respond

### Special Medical Facilities Referrals

68.0% in state

14.8% out of state

17.2% to unlisted facilities



EMS BUREAU  
1973



THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
LABORATORY OF ORGANIC CHEMISTRY

RECEIVED  
JAN 10 1964

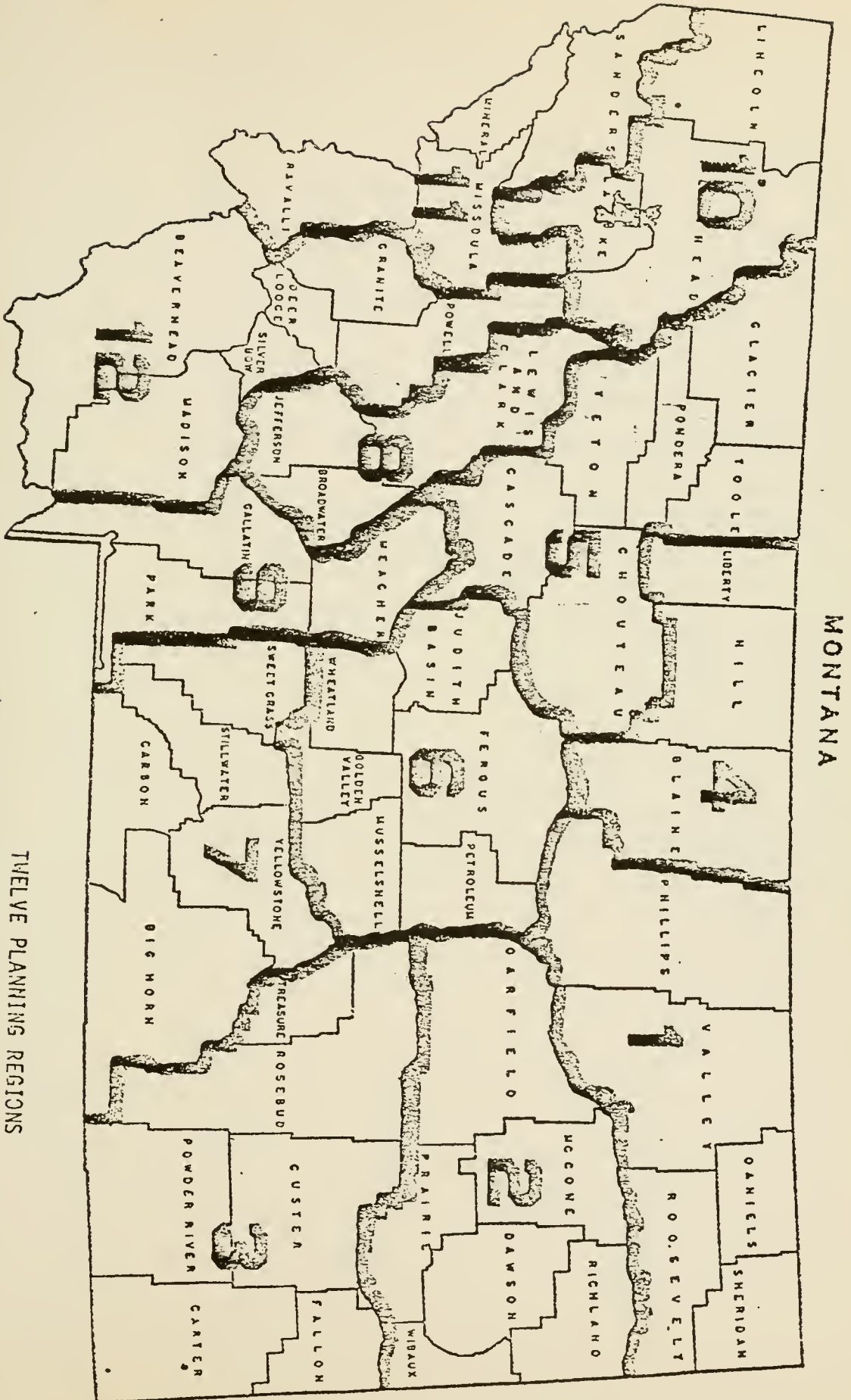
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# MONTANA

## TWELVE PLANNING REGIONS

as Designated by Governor Forrest H. Anderson  
Executive Order 2-71  
August 24, 1971





